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Infantry Training

Volume I

Infantry Platoon Weapons

PAMPHLET No. 9, PART III

84-mm Infantry Anti-Tank Gun

(All Arms)

1967

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The Chief of the General Staff.

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TECHNICAL DETAILS

Calibre	84-mm
Length of gun	4 ft 3 inches
Approximate weights:—	
Gun (complete with mount and telescopic sight)	36 lb
HEAT round	5¾ lb
Practice round	5¾ lb
Twist of rifling	Right hand
Type of sights	Telescopic and open
Sight range	600 metres (HEAT role)
System of operation	Breech loaded Percussion fired
Muzzle velocity	1,020 feet per second

INFANTRY TRAINING

VOLUME I

INFANTRY PLATOON WEAPONS

PAMPHLET No. 9, PART III

84-mm INFANTRY ANTI-TANK GUN

INTRODUCTION

The weapon

1. The 84-mm Infantry Anti-Tank Gun (L14A1) is of the breech loaded and percussion fired type. It is a shoulder-controlled, recoilless weapon.

2. The weapon can be fired in any normal firing position. The mount can be fitted near the muzzle to support the weapon in the prone position; it can also be fitted in a central position and used to assist in steadying the gun against the body when firing from the kneeling or standing positions.

3. This weapon can be fired by using the telescopic sight or the open sight. The infra-red sight can be fitted to the weapon.

The ammunition

4. The base of the round is closed by a plastic disc. The rim of the case is so made that the round, when loaded, has the primer cap correctly positioned in line with the firing pin. The weapon can fire anti-tank, HE, smoke, illuminating and 6.5-mm sub-calibre ammunition.

Safety distances under peace-time conditions

5. When the weapon is fired, the back-blast causes a danger area rearward of 30 metres, with an angle of 800 mils (45 degrees) either side of the line of the barrel. This area must be clear of any troops, equipment or obstruction.

Sub-calibre training device

6. Three sub-calibre training devices are issued with each weapon, and may be retained in unit pool. This number may vary in issue, according to units.

Interchangeability

7. The ammunition and spares can be interchanged with the Netherlands, Denmark, West Germany and Sweden.

CHAPTER 1.—INSTRUCTIONAL

LESSON 1.—CHARACTERISTICS, DESCRIPTION, STRIPPING, CLEANING, ASSEMBLY AND MECHANISM

Aim

8. To teach:—
   - (*a*) The characteristics and description of the weapon.
   - (*b*) How to strip, clean and assemble it.
   - (*c*) How the mechanism works.

Stores

9. Weapons in transit cases complete, drill round, sub-calibre device, cotton waste, posters and diagrams as required, and an empty case. Spare parts wallet.

Instructor's notes

10. As you handle parts of the weapon, name them and state briefly their purpose, but do not at this stage try to make the men memorize the part names. Two periods are required to teach this lesson.

Preliminaries

11. (*a*) Fit the telescopic sight.
   - (*b*) Explain and demonstrate "Normal Safety Precautions":—
     - (i) Having made sure the safety catch is at "Fire", push the cocking lever forward and put the safety catch to "Safe". Press the venturi locking catch forward and push the lever up. Ensure that there is no round in the chamber. Press down the lever and ensure that the locking strap is fully to the rear. Operate the trigger.
     - (ii) Ensure that all rounds are drill material.

12. Practise the squad.

Approach

13. This is a shoulder-controlled, recoilless weapon, capable of knocking out any known tank.

Characteristics

14. Explain and demonstrate:—
   - (*a*) The main characteristics of the weapon are accuracy and hard hitting power. Although it is used primarily against tanks, it can be used with good effect in a secondary role against gun emplacements, strong points, houses and similar targets.
   - (*b*) The gun weighs about 36 lb and can be carried and fired by one man, but requires a No. 2 as loader and ammunition carrier.

(*c*) The maximum effective range against stationary targets is about 500 metres. Moving targets can be engaged effectively up to 400 metres. Fire effect at these ranges is dependent on the training and skill of the firer. Firers will normally group their shots as closely with the 84-mm anti-tank gun as they do with the SLR.

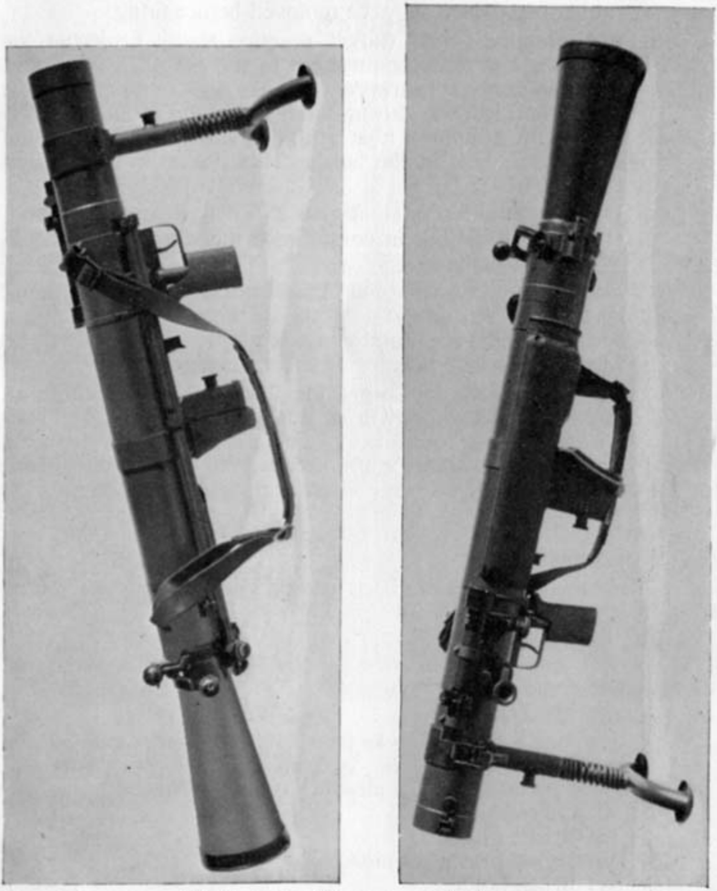


Fig 1.—The 84-mm anti-tank gun

Ammunition and packing

15. (*a*) The high explosive anti-tank (HEAT) round weighs 5¾ lb; it traces and has an instantaneous nose fuze which becomes armed when the projectile is approximately 5–10 metres from the muzzle of the weapon. The round is coloured BLACK and is marked with a YELLOW band and YELLOW stencilling. The nose fuze has a protective rubber cap, which must be removed before firing.

(*b*) The practice round (target practice tracer projectile, or TPTP) is a practice counterpart of the HEAT round, and has the same appearance. It has the same propellant charge and it traces during the flight of the round, but it is fitted with a dummy fuze, and an inert filling replaces the explosive charge in the head. This projectile is coloured LIGHT BLUE.

(*c*) Drill ammunition is similar to TPTP but cannot be fired. It is DARK BLUE in colour with the word "DRILL" in WHITE stencilling.

(*d*) The ammunition is issued in steel boxes, each box holding six rounds, Within the steel box are three plastic containers, each holding two rounds. Each plastic container will be fitted with a web harness to assist carriage.

(*e*) The sub-calibre device provides a means of practising all essential drills without firing full-calibre rounds. The sub-calibre outdoor round is of 6·5-mm calibre, and when fired is similar in trajectory and accuracy to the HEAT round. 6·5-mm indoor rounds are issued for indoor range work.

Additional equipment

16. There are two accessory bags marked I and II, details of which are as follows:—

(*a*) *Bag No. I.*
This bag is to be worn by the No. 1 and contains the telescopic sight.

(*b*) *Bag No. II.*
This bag is referred to as the spare parts wallet and is to be carried by the No. 2. It contains boresights, tools and spare parts, as well as cleaning kit comprising:—

(i) Oil can.
(ii) Bristle brush.
(iii) Nylon brush.
(iv) Brush holder.
(v) Jointed cleaning rod.

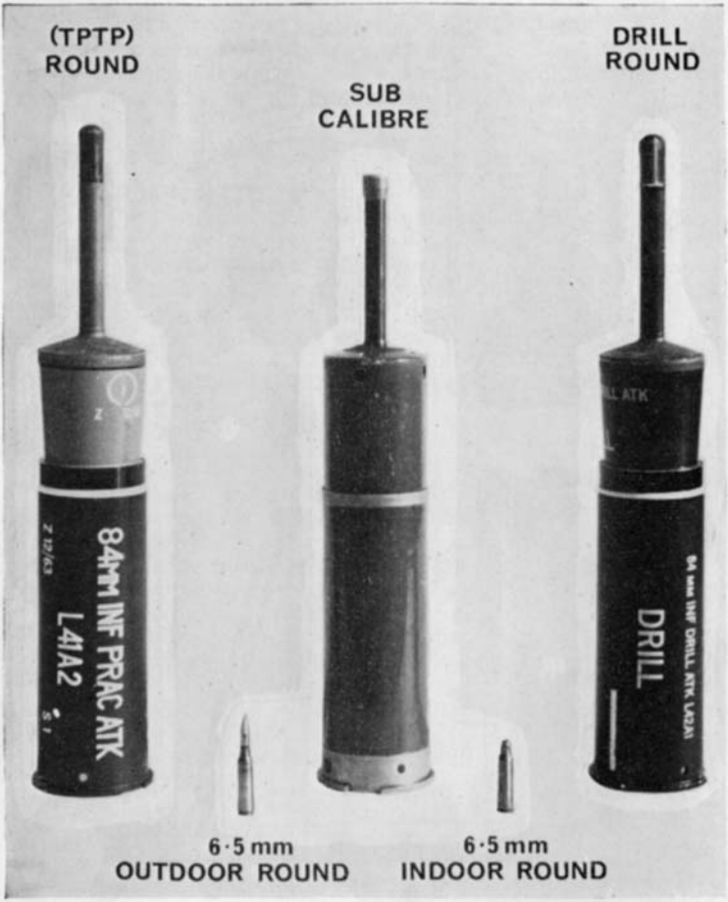


Fig 2.—Ammunition

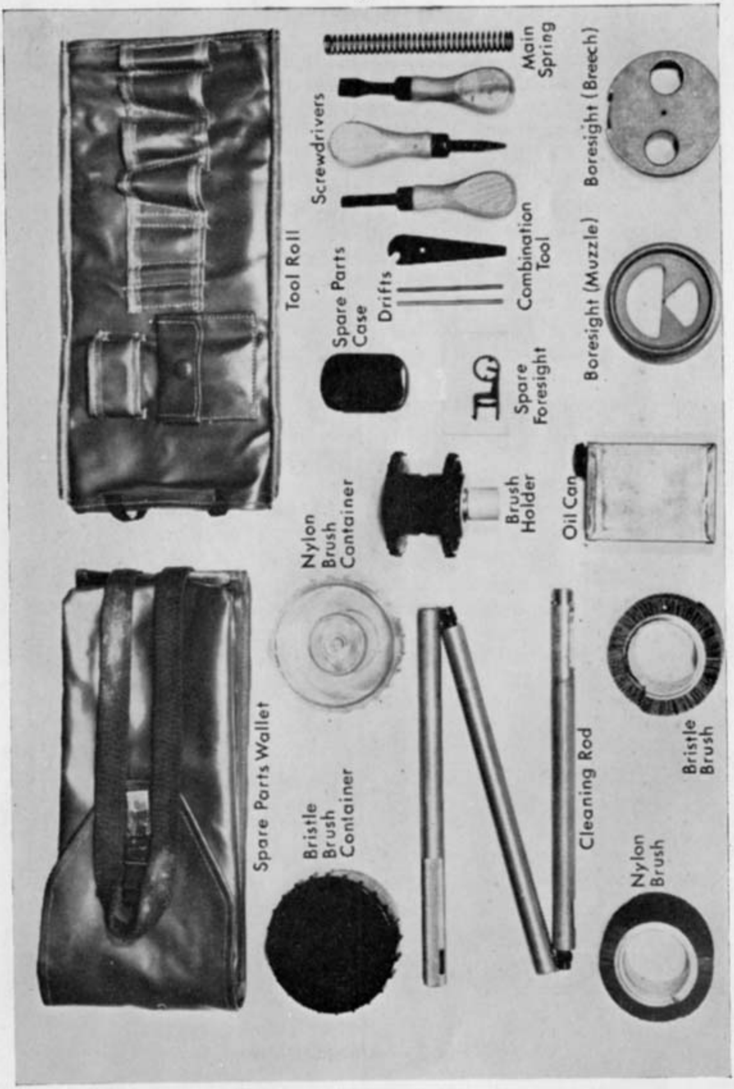


Fig 3.—Spare parts wallet

17. Question the squad.

Removing and fitting the telescope

18. Explain and demonstrate:—
    - (*a*) The telescope is fitted to a bracket. On the right side of the bracket there are locating trunnions and a spring-loaded securing catch. To remove the sight, press down on the spring plunger and rotate the sight away from the weapon.
    - (*b*) To fit the telescope:—
        - (i) Ensure that the open sights are screwed fully down and folded to the weapon.
        - (ii) With the rubber guard to the rear and with the bottom of the bracket held away from the weapon, fit the trunnions on to the weapon bracket. Holding the sight firmly on the trunnions, rotate the lower portion of the bracket towards the weapon, press down on the spring catch, and secure the sight to the bracket.

19. Practise the squad. Leave telescope off and return it to its bag.

Stripping

20. Explain and demonstrate:—
    - (*a*) Check that the gun is not cocked.
    - (*b*) Pull out the mount catch and remove the mount from its housing.
    - (*c*) Swing the front housing out of line with the cocking tube.
    - (*d*) Using the large screwdriver, unscrew the front end cap of the firing mechanism tube; remove the main spring.
    - (*e*) Move the cocking lever as far forward as possible. Remove the rear end cap and, using a screwdriver, lift out the firing pin. Care must be taken to ensure that the firing pin is lifted straight out, without levering. If the firing pin washer comes out, it must be replaced carefully.
    - (*f*) No further stripping is necessary if the firing pin only is being changed.
    - (*g*) Only when necessary (eg, for cleaning) unscrew the retaining screws of the cocking lever and remove the lever. With the trigger pressed, withdraw the cocking rod from the front of the firing mechanism tube.

Assembling

21. Explain and demonstrate:—
    - (*a*) Insert the firing pin and ensure that the groove fits into the corresponding guide. Push fully home.

(*b*) With the trigger pressed and the cam towards the barrel, replace the cocking rod from the front end of the tube. Replace the cocking lever with the curve to the rear, and screw in the retaining screws. Move the cocking rod backwards until the rear end is fitted into the recess of the firing pin.

(*c*) Replace the rear end cap.

(*d*) Press the trigger and push the rod fully to the rear. Replace the main spring, front end cap and front mount housing.

(*e*) Test the mechanism by cocking and then pressing the trigger.

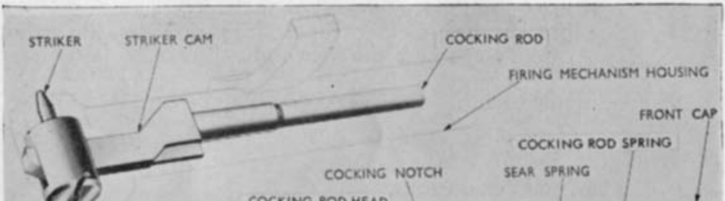


Fig 4.—Firing mechanism

22. Practise the squad in stripping and assembling the weapon. Leave the weapon stripped.

Mechanism of the safety catch

23. Explain and demonstrate:—

(*a*) The stem of the safety catch has two surfaces, one flat and the other round. When the safety catch is put to "Safe", the rounded part of the stem is under the sear, preventing the sear from being compressed by the trigger.

(*b*) When the safety catch is put to "Fire", the flat surface is under the sear, thus permitting movement of the sear.

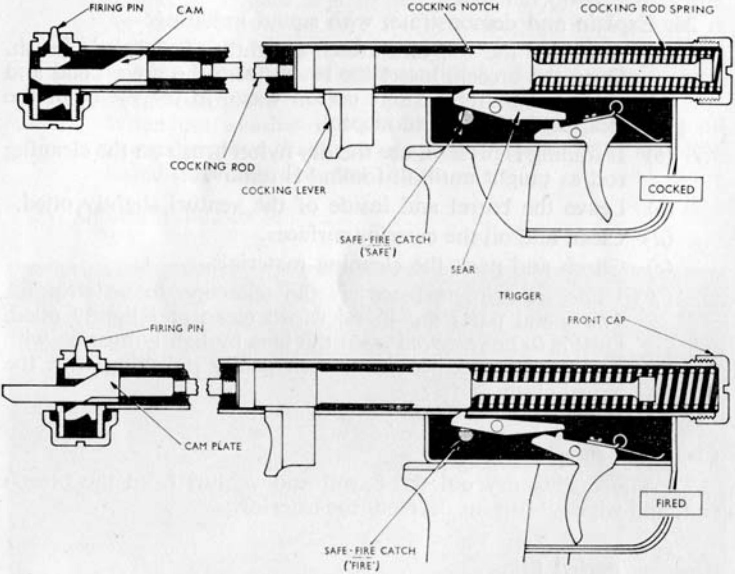


Fig. 5.—Mechanism

Mechanism

24. Using the stripped mechanism, explain and demonstrate:—

(*a*) When the firing mechanism is cocked the cocking rod is moved forward, compressing the main spring. The lug on the rod is engaged by the hook on the trigger sear.

(*b*) The cam on the rear end of the rod is now clear of the firing pin.

(*c*) When the trigger is pressed the sear is disengaged from the lug on the cocking rod.

(*d*) The main spring drives the cocking rod to the rear, so that the cam forces the firing pin on to the primer of the round.

(*e*) When the trigger is released the trigger spring returns the trigger to its original position.

(*f*) The safety catch can only be applied to "Safe" and the breech opened when the action is cocked.

25. Question the squad. Assemble the weapon.

Daily cleaning

26. Explain and demonstrate, with squad imitating:—

(*a*) Assemble the rod and attach a lightly oiled bristle brush. Open the breech, insert the brush from the breech end and clean the barrel. Insert cotton waste in the eyelet of the cleaning rod, dry and inspect.

(*b*) If fouling is present, use the dry nylon brush on the cleaning rod as taught until all fouling is removed.

(*c*) Leave the barrel and inside of the venturi slightly oiled.

(*d*) Clean and oil the exterior surfaces.

(*e*) Check and pack the cleaning materials.

(*f*) Under no circumstances is the telescope to be stripped. The metal parts are to be wiped clean and lightly oiled. Dust is to be removed from the lens by lightly dusting with the small brush provided, then gently polishing with the issued cloth.

Cleaning before firing

27. Thoroughly dry out the barrel and venturi from the breech end, and wipe all surplus oil from the exterior.

Cleaning during firing

28. If there is time during firing, the venturi and chamber can be quickly cleaned with a pad of cotton waste or rag.

Cleaning after firing

29. (*a*) Clean and oil the weapon as taught.

(*b*) If it is not possible to clean immediately, oil the barrel and the inner surface of the venturi. This will loosen the fouling and assist in cleaning later.

(*c*) Special attention should be paid to daily cleaning for a period of three days after firing.

(*d*) The firing mechanism tube should be cleaned using a rod.

Adverse conditions

30. (*a*) *Hot/humid climates.*
If the weapon is in store, all the surfaces should be well oiled to prevent rust. Frequent inspections will be necessary, particularly of the barrel and venturi.

(*b*) *Desert conditions.*
It is important that under extreme conditions of sand and dust the whole of the gun be kept dry. Cleaning brushes should be washed in soap and water and dried before use. As the weapon is dry, frequent inspection for rust is essential. If oil is used to remove rust, that part of the weapon affected must again be dried.

(*c*) *Arctic conditions*
When the weather is so cold that normal lubricating oil freezes, remove that type of oil and replace with low cold tested oil which does not freeze.

31. Question the squad.

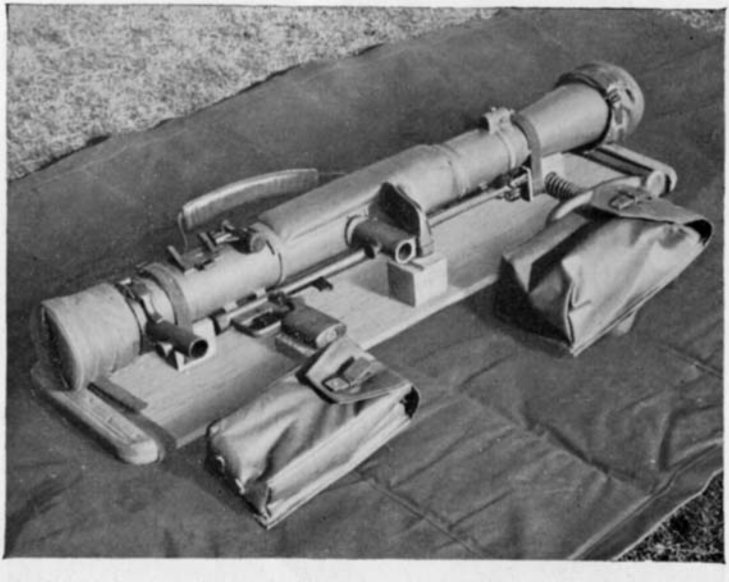


Fig 6.—The transit case

Packing the weapon

32. Explain and demonstrate:—
    - (*a*) Remove the telescope, if fitted, and replace into its bag. Ensure that the open sights are folded down.
    - (*b*) Replace the muzzle and venturi covers. Open out the transit case. Remove the mounting and place it in its socket in the transit case.
    - (*c*) Position the weapon on to the blocks of the wooden base, with the pistol grip resting flat on the base. Secure the quick release straps.
    - (*d*) Fit the two bags along the side of the weapon.
    - (*e*) Fold the ends of the cover neatly inwards, followed by the sides of the cover. Fasten the three securing straps.
    - (*f*) The transit case is provided to protect the weapon when in store or in a vehicle.

33. Practise the squad in packing the weapon into the transit case and unpacking it.

Conclusion

34. Questions from and to the squad.

35. Sum up.

LESSON 2.—FIRING POSITIONS—LOADING AND UNLOADING WITHOUT FIRING

Aim

36. To teach firing positions—loading and unloading without firing.

Stores

37. Weapons removed from transit cases, drill rounds in carriers, spare parts wallets.

Instructor's notes

38. (*a*) During demonstrations which require a team of two, the instructor should detail a member of the squad to assist. He should explain and demonstrate the actions to be performed.
    - (*b*) The best firing position for engaging moving targets is the one which gives the greatest flexibility combined with comfort.
    - (*c*) To assist in loading, a white line is painted at a two o'clock position on the barrel and rounds.

Preliminaries

39. Normal safety precautions. Sights are not to be erected.

Approach

40. This weapon can be fired from any of the normal rifle firing positions. Combined with quick and accurate loading there must be a quick adoption of the firing position to be used.

Adjusting the mount

41. Explain and demonstrate:—

(*a*) The mount has two housings, one at the front and one at the rear, in each of which it can be set in the high, low or offset position.

(*b*) The mount can be adjusted by pulling out the mount catch and rotating the mount.

42. Practise the squad.

Firing positions

43. Explain:—

Choice of position depends on:—

(*a*) Whether the ground is suitable.

(*b*) Whether the target can be clearly seen.

(*c*) Whether the arc of fire can be adequately covered.

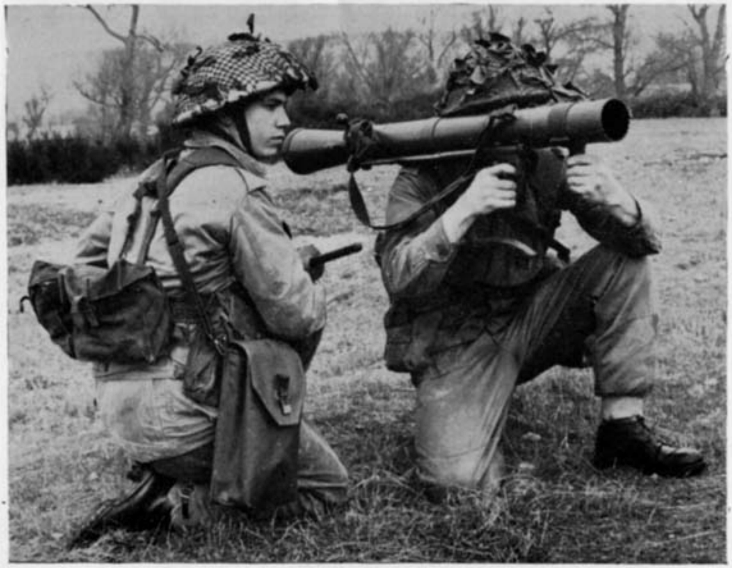


Fig 7.—Kneeling position—stationary targets

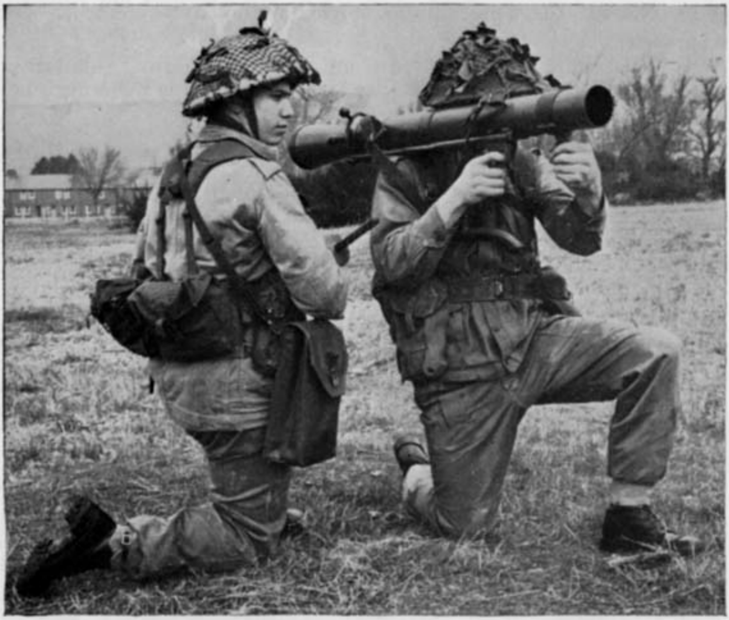


Fig 8.—Kneeling position—moving targets

Kneeling position

44. Explain and demonstrate:—

- (*a*) *Position of No.* 1.
  - (i) He should offset the mount in the rear housing and adopt the normal kneeling position. The right shoulder must be behind the shoulder piece, with the right hand holding the pistol grip and the forefinger alongside the trigger guard. The left hand holds the front grip.
  - (ii) Pull the weapon firmly into the shoulder and rest the left elbow on the left knee. The mount will then be against the chest.

(iii) Sit on the right heel, if possible.

(iv) To follow a moving target, raise the body until the upper part of the right leg is vertical. The left upper arm is then held close to the chest. Swing from the waist.

(*b*) *Position of No*. 2.
He is to kneel on both knees opposite the No. 1's right shoulder. He must conform to any change in position made by the No. 1. Certain circumstances may require the No. 2 to be on the same side as the No. 1.

45. Practise the squad.

Loading

46. Explain and demonstrate in the kneeling position:—

(*a*) *Duties of No*. 1.

(i) When the No. 1 decides to load, or when the order "*Load*" is given, he must push the cocking lever fully forward and put the safety catch to "Safe".

(ii) He must then order "*Load*", and immediately replace his hand on the pistol grip to hold the weapon steady during the actions of loading. The forefinger must be outside the trigger guard and not on the trigger.

(*b*) *Duties of No*. 2.

(i) When the No. 1 orders "*Load*", the No. 2 is to repeat the order, open the breech, take a round from its container, and hold it nose forward along the right forearm and close to the chest; he is then to examine the chamber for dirt or unburnt propellant, and if these are present he must, using the left hand, clean the chamber.

(ii) Remove the protective cap from the round, position one finger in the recess of the rim of the round and, ensuring that the recess is in line with the loading guide, insert the round fully into the chamber.

(iii) Close the breech and firmly tap the locking strap towards the venturi, to ensure that it is correctly positioned, and call out "*Loaded*".

(iv) He should immediately remove the next round from its container ready for loading.

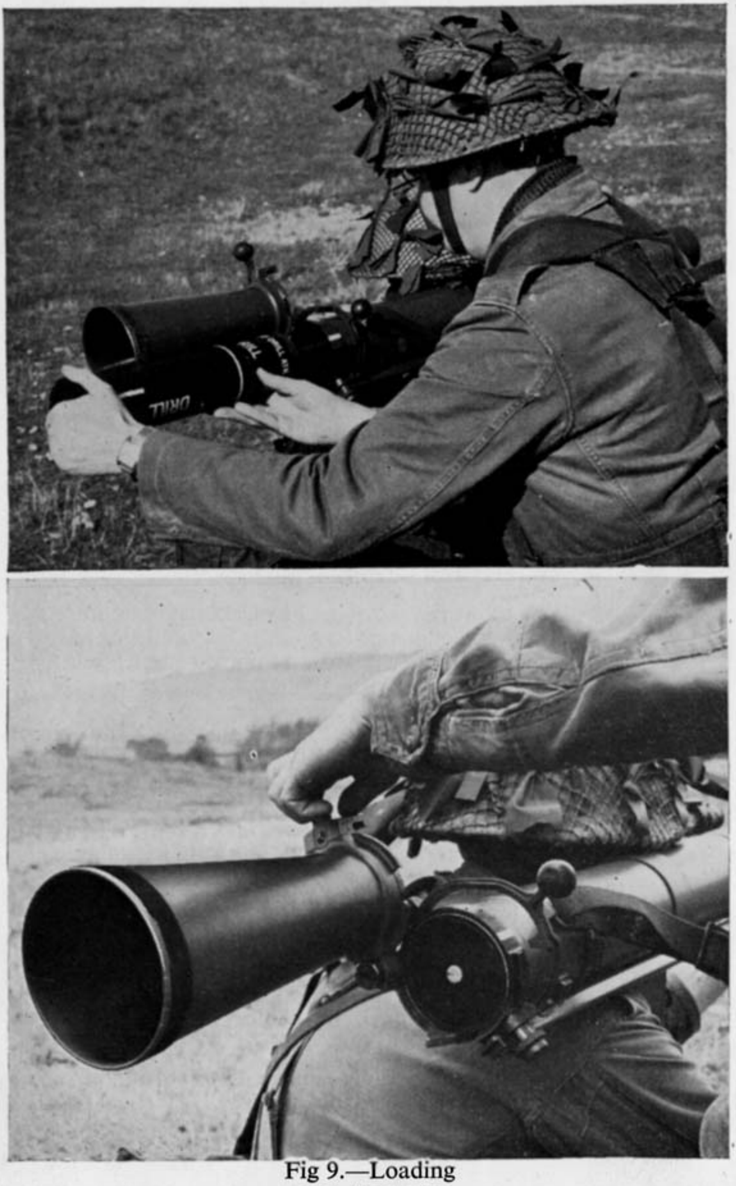


Fig 9.—Loading

Unloading

47. Explain and demonstrate:—

(*a*) *Actions of No.* 1.
If the No. 1 decides not to fire, or is given the order "*Unload*", he must ensure that the safety catch is set at "Safe" and order "*Unload*". He is to hold the pistol grip as for loading.

(*b*) *Actions of No.* 2.

(i) He must repeat the order "*Unload*", open the breech and tap the lever of the locking strap forward. At the same time the round must be caught by the left hand and removed from the weapon.

(ii) Close the breech, tap the locking strap towards the venturi, and call out "*Unloaded*". Replace the protective cap. Return the round to its container.

(*c*) The No. 1 is then to put the safety catch to "Fire" and press the trigger.

48. Practise the squad in loading and unloading.

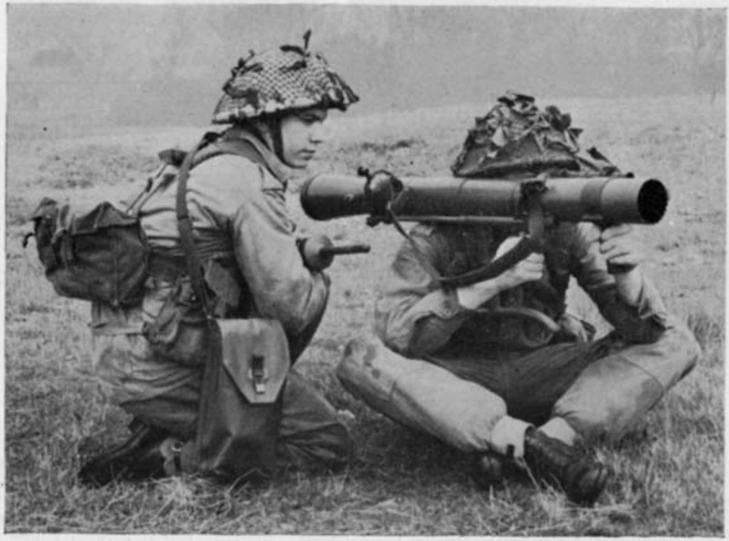


Fig 10.—Sitting position—stationary targets

Sitting position

49. Explain and demonstrate:—

(*a*) There may be occasions when this position will be used. The No. 1 should adopt a sitting position facing half right, holding the weapon as taught, and resting both elbows on or inside the knees.

(*b*) To follow a moving target, keep the body erect with the elbows close in to the chest, and swing from the waist.

(*c*) The No. 2 is to kneel on the right of the No. 1.

50. Practise the squad.

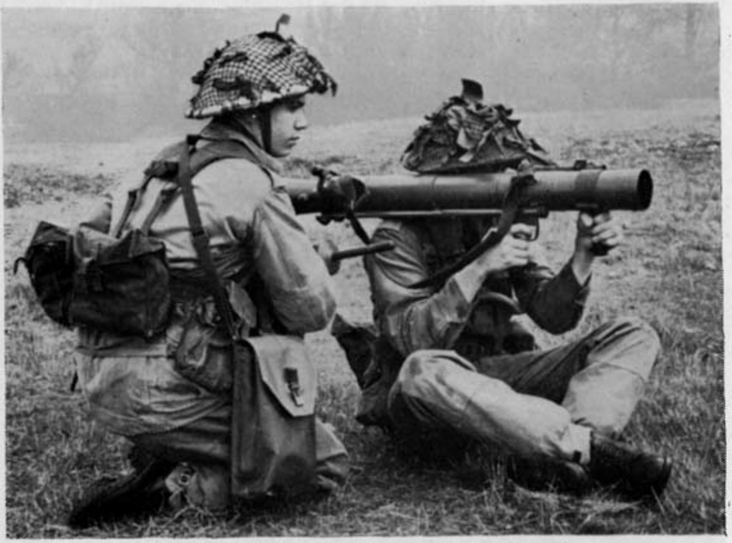


Fig 11.—Sitting position—moving targets

Standing position

51. Explain and demonstrate:—

(*a*) The standing position may be used when firing from high cover, or when taking a quick shot in the open. In defence the position may be used from a fire trench or an emplacement.

(*b*) Stand half right to the target, body evenly balanced on both feet. which should be about two feet apart.

(*c*) If firing from a trench, put the mount in the front housing, and stand as close to the rear of the trench as possible and at one end of it. Always ensure that the venturi is above the ground level and rearward of the back face of the trench.

(*d*) When standing in the open, the gun may be steadied by supporting the right hand with the left hand instead of holding the front grip.

(*e*) The No. 2 must be close to the No. 1, as in other positions.

(*f*) If firing from a trench, the No. 2 should check that the venturi is clear of the back of the trench after loading.

52. Practise the squad.

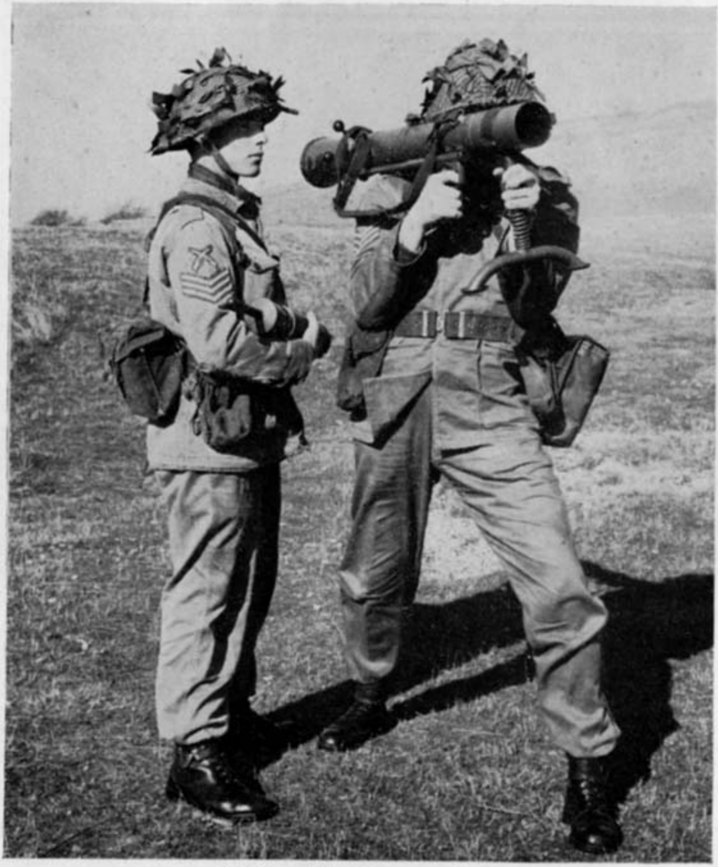


Fig 12.—Standing position

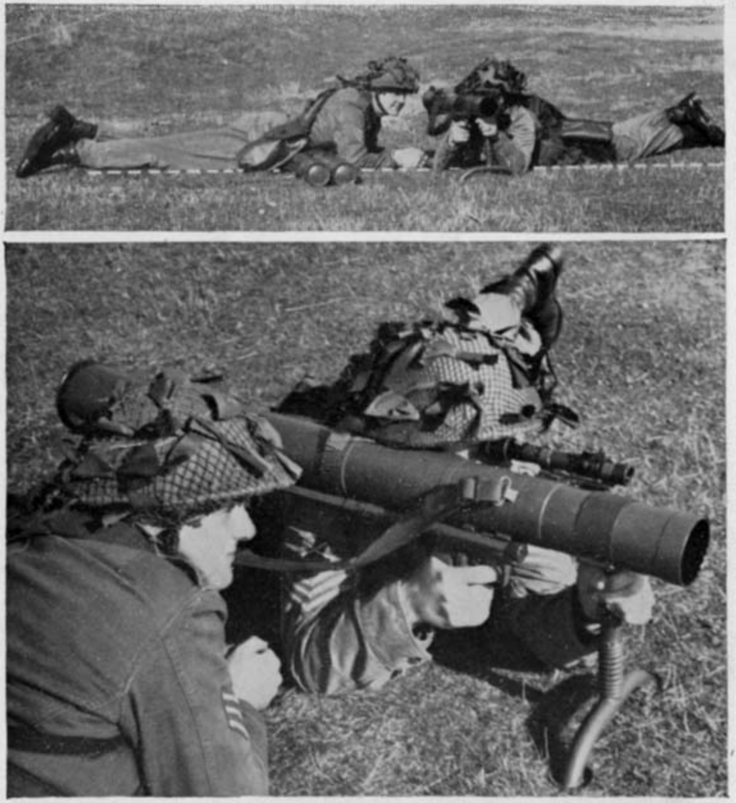


Fig 13.—Lying position

Lying position

53. Explain and demonstrate:—

(*a*) It is difficult to engage moving targets from the lying position. This position may therefore be used to engage stationary targets, but not moving targets unless they are distant targets requiring a minimum swing and no other position is practicable. The mount may be put in the front housing.

(*b*) The sitting, kneeling or standing positions should be used whenever possible in the engagement of moving targets, particularly when a wide arc is to be covered.

(*c*) *Position of No.* 1.

(i) He is to lie down, with the body as nearly as possible at right angles to the weapon. Bring the right leg over the left. It is important that no part of the body is behind the weapon.

(ii) The right shoulder should be firmly in contact with the shoulder piece, with the weapon held as taught.

(*d*) *Position of No.* 2.

The No. 2 must lie opposite the No. 1 and at right angles to the weapon. No part of the body must be behind the weapon.

54. Practise the squad.

Other positions

55. Explain that loading and unloading are the same in other positions.

56. Practise the squad in loading and unloading in all positions.

Conclusion

57. Questions from and to the squad.

58. Practise weak points.

59. Sum up.

PRACTICE 1.—**STRIPPING**

Aim

60. To practise stripping and assembling, and revise mechanism.

Stores

61. Weapons in transit cases complete, drill rounds, cotton waste, diagrams as necessary.

Instructor's notes

62. Men must be able to strip and assemble accurately and quickly, but do not make them do it against time, or damage may occur to the weapon. In competitions judge the men on whether their actions are correct and how well they know parts of the weapon.

Preliminaries

63. (*a*) Safety precautions.
(*b*) Fit the telescopic sight.

Practice

64. (*a*) Stripping and assembling.
(*b*) Revision of mechanism.
(*c*) Questions on all types of cleaning.

Conclusion

65. (*a*) Questions from and to the squad.
(*b*) Sum up progress made.

LESSON 3.—USE OF SIGHTS AND AIMING AT STATIONARY TARGETS

Aim

66. To teach:—
   - (*a*) The use of sights.
   - (*b*) How to aim at stationary targets.

Stores

67. Weapons in transit cases complete, telescopic sight, tank silhouettes, aim diagrams, blackboard and chalk.

Instructor's notes

68. For elementary practice, representative tank targets should be pinned to a wall or screen in front of the weapon. A scale model is an advantage.

Preliminaries

69. Normal safety precautions.

Approach

70. In order to obtain the best effect from the weapon under battle conditions, there must be accurate estimation of the range to the target, together with quick and accurate sightsetting and aiming. The maximum effective range of this weapon when engaging stationary targets is 500 metres.

The telescopic sight pattern

71. Explain and demonstrate:—

The sight pattern (*show* diagram) consists of a pointer. On each side of the pointer is a small square, a short vertical line and a long vertical line. A horizontal line assists in keeping the correct elevation when aiming at moving targets.

The range drum

72. Explain and demonstrate:—
   - (*a*) On the left of the bracket there is a range scale with two sets of figures. The outer figures are used in the anti-tank role. These are marked from 0 to 6 in divisions of 50 metres and are white in colour. An indicator mark on the bracket denotes the range setting.
   - (*b*) The inner set of figures are used when firing anti-personnel rounds and are light green in colour.
   - (*c*) If it is found that the range drum has been pulled out and is recording on the inner scale, rotate the drum to 0 and push in the drum.
   - (*d*) If the estimated range cannot be put on the drum (eg, a range estimated at 275 metres), set the drum at the next highest setting—in this case 300 metres—and aim a little lower on the target.

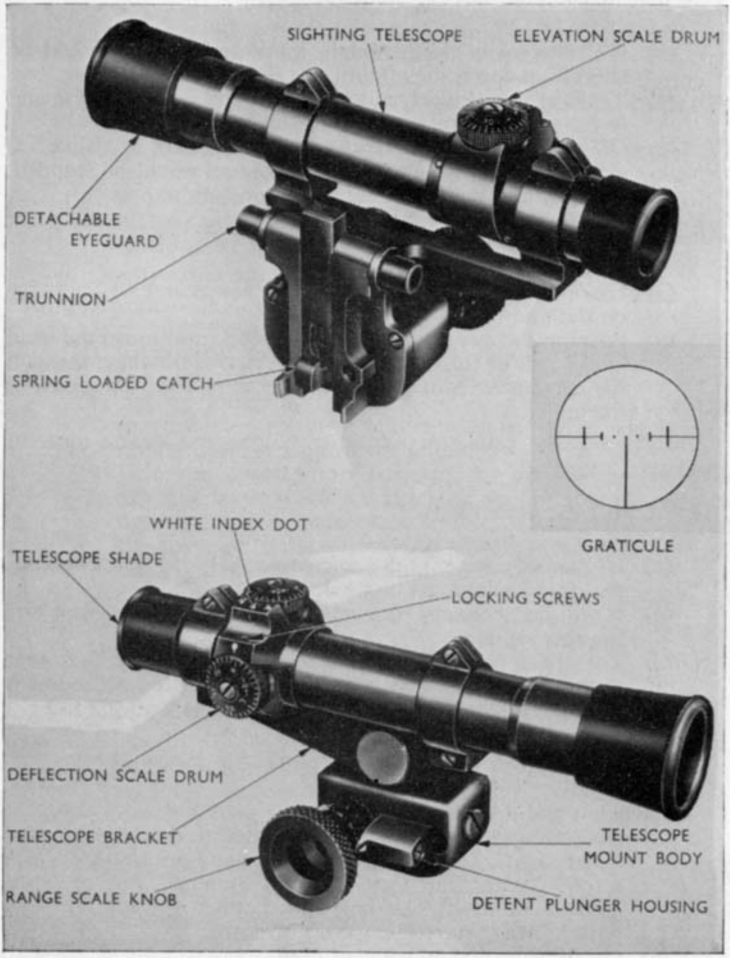


Fig 14.—The telescopic sight

73. Practise the squad in setting ranges. Fit the telescope.

Selection of point of aim

74. Explain:—

(*a*) If the target is close enough, a vulnerable spot should be selected as the point of aim.

(*b*) Tanks are particularly vulnerable around the turret ring and in the sides and rear part of the hull.

(*c*) Only aim at the rear end if no other part is visible, as although tanks which run on diesel fuel would be stopped, the crew and the guns may remain in action.

Aiming—stationary targets

75. Explain and demonstrate:—

(*a*) Estimate the range to the target in metres and set the range on the drum.

(*b*) Position the eye in rear of the telescope and move the head backwards or forwards until a full view is obtained through the telescope. Aim the top of the pointer on the centre of the target.

76. Practise the squad in adjusting ranges and laying aims at stationary targets.

Aiming with the open sights

77. Explain and demonstrate:—

(*a*) If, for any reason, the telescopic sight is not available, the open sights must be used.

(*b*) It will be necessary to swing outwards both the front and the rear sights.

(*c*) To set the range for normal temperature, rotate the range drum on the rear sight until the centre of the white line is opposite the range required. Aiming is as with the rifle.

78. Practise the squad.

Familiarization—the telescopic sight

79. Explain and demonstrate:—

(*a*) An elevating adjustment drum is fitted to the upper surface of the sight. This is locked firmly in any position by a lock screw. When the lock screw is loosened, the elevating adjustment drum can be rotated, thus moving the sight pattern inside the telescope up or down.

(*b*) On the elevating adjustment drum there is a zero mark with the figure 0 inscribed.

(*c*) The top of the elevating adjustment drum is marked in mils and numbered every five, both plus and minus.

(*d*) If the elevation scale does not read zero, ensure that the lock screw is tight, then loosen the screw in the centre of the scale. Rotate the scale until the zero mark is opposite the normal temperature indicator. Tighten the screw.

(*e*) The direction adjustment drum has a similar lock screw. When the drum is rotated, the sight pattern is moved to the right or left. This drum is also marked in mils and has the letters R and L inscribed.

(*f*) If the direction scale does not read zero, carry out the actions as taught, except ensuring that the zero mark is opposite the indicator.

(*g*) These elevation and direction adjustment drums are mainly used for zeroing.

80. Question the squad.

Familiarization—the open sights

81. Explain and demonstrate:—

(*a*) To remedy an error in elevation, rotate the range drum in the required direction. The elevating scale is then set to zero by loosening the screw on the scale indicator and by moving it up or down until the centre of the white line is opposite zero. Tighten the screw.

(*b*) Errors in direction are corrected by moving the backsight aperture laterally. If the aim is to the left, loosen the screw on the left of the sight block and tighten the nut, so moving the aperture to the left. If the error is to the right, the nut must first be loosened and the screw tightened.

82. Question the squad.

Conclusion

83. Questions from and to the squad.

84. Practise weak points.

85. Sum up.

LESSON 4.—AIMING AT MOVING TARGETS

Aim

86. To teach aiming at moving targets.

Stores

87. Weapons in transit cases complete, telescopic sight, tank silhouettes, aim diagrams, blackboard and chalk. A scale model tank is a useful aid.

Preliminaries

88. Normal safety precautions. Fit telescopic sight.

Revision

89. Revise sightsetting and aiming at stationary targets.

Approach

90. When engaging moving targets quick and accurate estimation of speed and range is essential.

Leads—telescopic sight

91. Explain:—

(*a*) To enable the firer to aim at moving targets, marks on the sight pattern are termed "leads" and are referred to as follows:—

Lead 1—the small square.
Lead 2—the short vertical line.
Lead 3—the long vertical line.

(*b*) Leads 1, 2 and 3 are on each side of the pointer.

Method of engaging moving targets

92. Explain, showing examples:—

(*a*) *Head on or going away targets* (*ie*, *targets showing only the front or back to the firer*).
Set the range drum to the range at which you expect to engage the target. If the target is close, aim at a vulnerable spot; if it is distant, aim at the centre. Engage the target when the aim is correct and the tank is at the selected range.

(*b*) *Crossing targets* (*ie*, *targets moving at any angle across the front*, *and showing some side*).
Estimate the apparent crossing speed and direction of the target's movement. Set the range drum at the range at which you intend to engage the target, then aim by placing the required lead mark on the centre of the target, using the following table as a guide:—

Apparent speed	**(mph)**	**Lead**
Slow	(10)	1
Fast	(20)	2
Very fast	(30)	3

The pointer must always be in front of the target.

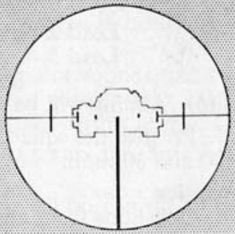
(*c*) The No. 1 must decide whether to aim at and swing with the target, or to aim in front of the target and allow it to move on to the lead.

93. Practise the squad and question them on all points of aim. As much practice as possible must be given, setting problems on a variety of speeds at all ranges up to 400 metres.

AIMING CHART - RULES FOR TARGET AIMING

HEAD ON OR GOING AWAY TARGETS.
SHOWING ONLY THE FRONT OR BACK

Pointer in centre of Target



CROSSING TARGETS MOVING AT ANY ANGLE
SHOWING SOME SIDE.

NOTE - In order to maintain correct aim the pointer must always be forward of the centre of a moving target.

SLOW
(approx. 10 m.p.h.)
First leadmark in centre of target.

FAST
(approx. 20 m.p.h.)
Second leadmark in centre of target.

VERY FAST
(approx 30 m.p.h.)
Third leadmark in centre of target.

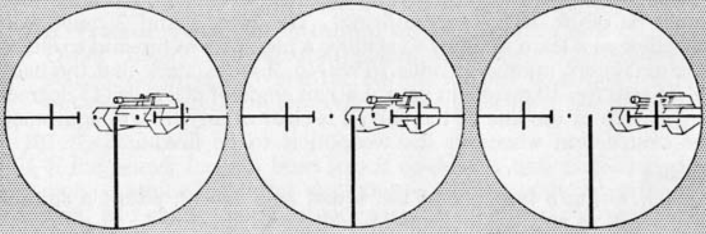


Fig 15.—Aiming

Leads—open sights

94. Explain:—

(*a*) Leads on the open sights are referred to as follows:—

Lead 1—half way between the vertical bar and the inner edge of the horizontal bar.

Lead 2—the inner edge of the horizontal bar.

Lead 3—increase the amount of lead required, using the horizontal bar to maintain elevation.

(*b*) Aiming will be as with the telescopic sight for all targets.

95. Practise the squad. Let them see a target moving at speeds of 10, 20 and 30 mph.

Conclusion

96. Questions from and to the squad.

97. Sum up. Stress the necessity of accurately judging the range to, and speed of, targets.

LESSON 5.—FIRING AND ACTION ON MISFIRE

Aim

98. To teach firing and the action on misfire.

Stores

99. Weapons in transit cases complete, two drill rounds per weapon, and tank silhouette targets.

Preliminaries

100. Normal safety precautions. Fit the telescopic sight.

Revision

101. Loading and unloading. Remind the squad of the action of firing pin and primer cap.

Approach

102. Combined with quick and accurate loading and aiming, there must be quick and accurate firing. The Nos. 1 and 2 must work together as a team in order to achieve a high rate of fire and to ensure the maximum number of kills. The No. 2 must check that the back-blast area (ie, 30 metres in rear, with an angle of 800 mils (45 degrees) either side of the line of the barrel) is clear of any troops, equipment or obstruction whenever the weapon is to be fired.

Firing

103. Using a member of the squad as a No. 2, adopt a suitable fire position and load. Explain and demonstrate:—

(*a*) When the No. 1 decides to engage the target, he is to set the sights, put the safety catch to "Fire", aim and take the first pressure. When the aim is correct he is to fire by taking the second pressure.

(*b*) When the trigger has been operated, the No. 1 must open his left eye, observe the strike, immediately cock the weapon, put the safety catch to "Safe" and order "*Load*".

(*c*) The No. 2 is to repeat the order, unload the fired case, throwing it well clear of the back-blast area, examine the chamber for unburnt propellant, remove if necessary and load again as taught.

(*d*) Before firing the second and subsequent rounds, the No. 1 must make any necessary alterations to elevation or point of aim, dependent on any errors made with the first shot.

(*e*) Should the back-blast area not be clear, the No. 2 must call out "*Stop*".

(*f*) The method of firing is the same in all positions.

104. Practise the squad.

Action on a misfire

105. Explain and demonstrate as necessary:—

(*a*) Should a misfire occur, the No. 1 must continue to hold the weapon pointing towards the target, re-cock, aim and operate the trigger.

(*b*) If the round is still a misfire, the No. 1 must wait for 15 seconds, in case of a possible hang fire, re-cock, put the safety catch to "Safe", then order "*Misfire—unload*". He must maintain a firm hold on the weapon, which must be held pointed in the general direction of the target.

(*c*) The No. 2 is to repeat "*Misfire—unload*", remove the round and inspect the primer. If the primer has been firmly struck, load the next round immediately, put the misfired round away (to be destroyed later) from the remaining live rounds, and carry on firing.

106. Practise the squad in misfire drill as follows:—
Order "*Load*", indicate a target and, when the trigger is pressed, state "*Not fired*". When the correct actions have been carried out and the No. 2 examines the primer, indicate a "*Good strike*".

107. Explain:—
If the primer has not been struck or there is only slight indentation, examine the firing mechanism, dealing with the firing pin first, and change parts as necessary. Reload and carry on firing as taught.

108. Practise the squad as before, but when the No. 2 examines the primer indicate either "*Not struck*" or "*Light strike*".

109. Explain:—

(*a*) In the face of the enemy it may be a worth-while risk, depending on circumstances, not to wait for 15 seconds' delay.

(*b*) During darkness, if there is a misfire, the No. 1 is to carry out the same drill as in daylight. As it may not be possible to determine if the primer has been struck, the No. 2 must unload and immediately load with a fresh round.

Conclusion

110. Questions from and to the squad.

111. Practise weak points.

112. Sum up.

PRACTICE 2.—FIRING POSITIONS, LOADING, UNLOADING AND AIMING AT STATIONARY AND MOVING TARGETS

Aim

113. To practise the men in firing positions, loading, unloading and aiming at stationary and moving targets.

Stores

114. Weapons in transit cases complete, tank silhouettes, aim diagrams, drill rounds in containers, spare parts wallets, blackboard and chalk.

Preliminaries

115. Safety precautions.

Practice

116. (*a*) Give the men practice in loading and unloading in all fire positions.

(*b*) Using diagrams, set problems on aiming at stationary and moving targets.

(*c*) Competitions and tests, perhaps based on the training tests, help to keep the men interested.

Conclusion

117. Questions to and from the squad.

118. Sum up progress made.

LESSON 6.—BORESIGHTING AND ZEROING

Aim

119. (*a*) To teach how to boresight.

(*b*) To teach how to zero the telescopic and open sights.

Stores

120. Weapons in transit cases complete. Three practice rounds per weapon, if the boresighting is to be confirmed by firing. Diagrams of aim picture through boresights. Spare parts wallets.

Instructor's notes

121. (*a*) An aiming point **at least 300 metres away** must be used when boresighting.
   (*b*) This lesson may well be taught on the range immediately before firing.
   (*c*) The lying position is to be adopted for zeroing.

Preliminaries

122. Normal safety precautions. Fit the telescope.

Approach

123. The weapon must be zeroed as soon as possible after issue. It will also be necessary to re-check the zero if inaccuracy is suspected. The aim is to make certain that the axis of the bore and the line of sight, with both types of sights, with the range drum set at zero, are pointing at the same aiming mark at a range of not less than 300 metres.

Boresights

124. Explain and demonstrate:—
   (*a*) The rear boresight has a small aperture. The method of fitting is to open the breech, insert the boresight and close the breech.
   (*b*) The front boresight is inserted into the muzzle so that the straight edges of the boresight are horizontal.

To zero with the telescopic sight

125. Explain and demonstrate:—
   (*a*) Set the elevating drum with the indicator at the normal temperature. Set the range and deflection drums to zero.
   (*b*) Loosen both lock screws.
   (*c*) Select a clearly defined aiming mark at a range of not less than 300 metres and indicate the aiming mark to the No. 2.
   (*d*) Ensure that the weapon is firmly mounted; both numbers adopt a prone position, with the No. 2 lying directly in rear of the weapon. The No. 2 is to hold the venturi and, using the boresights, aim at the mark indicated.
   (*e*) The No. 1 is to look through the telescope. The No. 2 will indicate to the No. 1 when the aim with the boresight is correct.

(*f*) If the aims with the telescope and the boresights coincide, tighten the lock screws, then check that the aims still coincide. If the aims do not coincide, the No. 1 will loosen the lock screws and rotate the elevation and deflection drums as taught until the aims do coincide. Tighten the lock screws.

(*g*) The Nos. 1 and 2 must now change places and agree that the zero obtained by boresighting is correct.

Zeroing the scales

126. Explain and demonstrate:—

If the elevation and deflection scales do not read zero, adjust as taught (*see* para 79(*d*)).

127. Practise the squad. The telescope should be put out of zero before practice begins.

To zero with the open sights

128. Explain and demonstrate:—

(*a*) Remove the telescope and return it to the bag.
(*b*) Position the open sights for aiming, and set the range scale of the open sights to zero at normal temperature setting.
(*c*) The No. 2 is to aim with the boresights as taught.
(*d*) The No. 1 is to check the aim of the open sights.
(*e*) For errors in elevation rotate the range drum in the required direction.
(*f*) For errors in direction adjust as taught (*see* para 81(*b*)).
(*g*) The Nos. 1 and 2 must now change places and agree on the zero and boresighting.
(*h*) The elevating scale is then set to zero. The reading on the direction scale should be noted.

129. Practise the squad. The sights should be put out of zero before practice begins.

130. **It is essential** that the weapons be left correctly boresighted when the lesson is completed.

131. The weapon is not considered to be zeroed until boresighting has been confirmed by the firing of TPTP or HEAT full-calibre ammunition.

Conclusion

132. Questions from and to the squad.

133. Sum up.

LESSON 7.—SUB-CALIBRE DEVICE AND INTRODUCTORY SHOOT

Aim

134. To teach:—

(*a*) The details of the sub-calibre training device.

(*b*) How to engage stationary targets up to 300 metres.

Stores

135. Weapons in transit cases complete, sub-calibre training devices, 6·5-mm outdoor ammunition, targets in frames on a gallery range, ear defenders for each man.

Instructor's notes

136. (*a*) The sub-calibre device will be used during the early stages of training to practise the team in firing at both stationary and moving targets. It is economical, in that a 6·5-mm round is used.

(*b*) It must be borne in mind that the absence of back-blast tends to induce carelessness and loose holding. These points must be checked at all times.

(*c*) When the soldier has become proficient in aiming and firing at moving targets with the sub-calibre round, he must progress to the firing of practice and HEAT rounds.

(*d*) It will be the responsibility of the officer conducting the firing to detail one man to each team to prepare the devices as they are fired. This should not be the No. 2.

Preliminaries

137. Normal safety precautions. Check, by removing the adaptor, that there are no live rounds in the devices. Check numbers to ensure that those on adaptor and device are the same.

Description

138. Explain:—

(*a*) This is a device fitted with a barrel from which a 6·5-mm round can be fired. The rear of the device is fitted with an adaptor which can be quickly removed and replaced.

(*b*) By the use of this device the normal drills of loading and unloading can be carried out, and accuracy of shooting at both stationary and moving targets can be assessed.

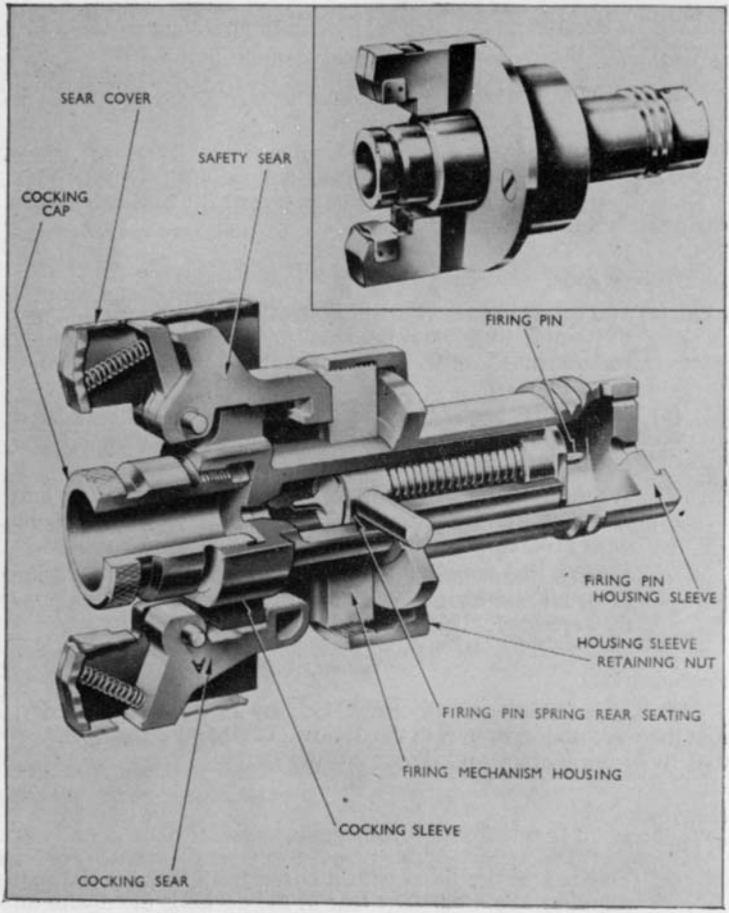


Fig 16.—The sub-calibre adaptor

Preparation for firing

139. Explain and demonstrate:—

(*a*) Holding the device with the barrel downwards, inspect the adaptor. If the cocking piece is down, fit the claws of the cocking tool into the groove of the cocking piece and press firmly down on the cocking tool handle. This leverage will cock the firing mechanism.

(*b*) The adaptor can now be removed by unscrewing in an anti-clockwise direction.

(*c*) Slide the base of the tracer round into the groove on the front end of the adaptor, screw the adaptor fully into the device, and then unscrew until the indicator mark is opposite the line marked with the letter S (for "Safe").

(*d*) When these preparations have been carried out, lay the device on a groundsheet or on a clean area to prevent mud or soil from entering the barrel.

(*e*) Check that all screws on the weapon are tight, including the front and rear end caps.

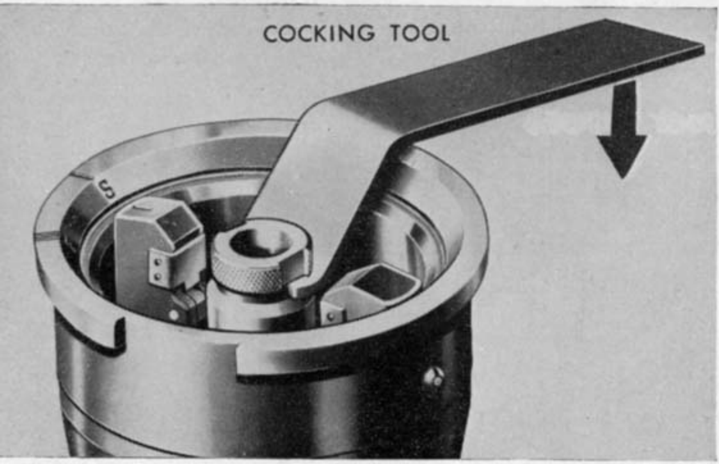


Fig 17.—Cocking the adaptor

Loading, firing and unloading

140. Explain:—

- (*a*) The actions are the same as already taught, except that when the device is picked up by the No. 2 to load, he must set the adaptor to F (for "Fire").
- (*b*) The device must be held pointing in the general direction of the target.
- (*c*) When the round has been fired and the device unloaded, the device should be prepared for firing again as necessary.

141. Practise the squad in preparing the sub-calibre device for firing.

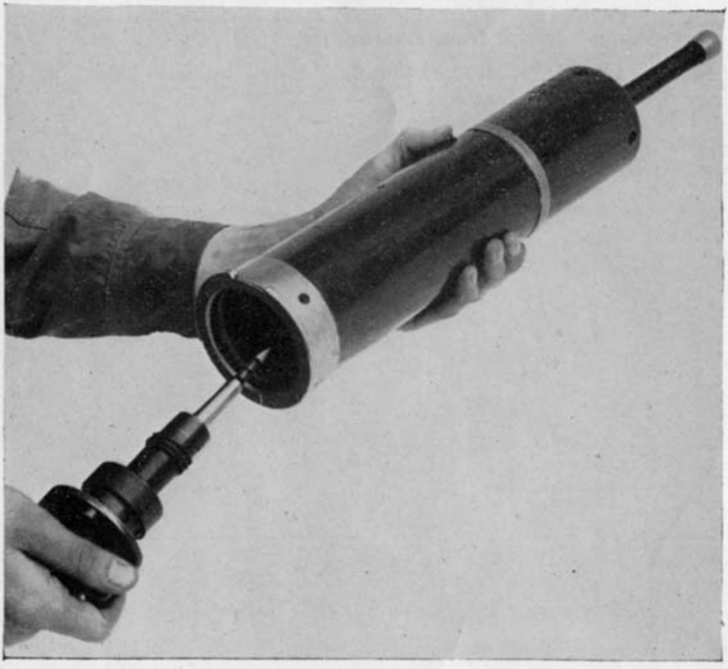


Fig 18.—Preparing the sub-calibre device for firing

Firing practice

142. (*a*) The sub-calibre devices and the weapons must be zeroed before firing takes place.

(*b*) Practice should then be given in preliminary grouping at 100 metres and application of fire at 200 and 300 metres.

(*c*) If tank targets are not available, targets on the normal gallery range can be used.

(*d*) Each man should fire three rounds with each sight at each range. He must watch the tracer and make any necessary alteration to elevation or point of aim at 200 and 300 metres to group on to the centre of the target.

Maintenance

143. After firing, clean the weapons and sub-calibre devices. The following points should be noted.:—

(*a*) Considerable fouling will be left in the main barrel of the gun. The main barrel must be cleaned as taught. If neglected, the fouling will harden and will be difficult to remove.

(*b*) The adaptor must be removed from the device and the 6·5-mm barrel cleaned as for the normal rifle barrel, using the nylon pull-through and flannelette, size 4 × 1 inches. The adaptor must be cleaned and left slightly oiled, and screwed back into the device. Any burrs set up on the body or rim which cause difficulty in loading must be reported to the armourer. Any device so affected must **not** be used again until the condition has been rectified, otherwise damage may be caused to the device and weapon during loading.

(*c*) The device is to be left in a fired condition before it is returned to its container, to ease tension on the spring. When the adaptor has been screwed back into the device, load the device and fire the gun. The gun may then be unloaded and the device packed away. **The adaptor must not be uncocked in any other way, otherwise the device may become damaged.**

(*d*) After firing, before leaving the range, the normal end-of-firing precautions must be observed and great care taken that all weapons and sub-calibre devices are unloaded before they are packed.

Conclusion

144. Discuss results of shooting.

145. Questions from and to the squad.

146. Sum up progress made.

LESSON 8.—HANDLING—FACTORS AFFECTING TANK KILLING

Instructor's notes

147. (*a*) This lesson is in five parts. Parts 1 and 2 should be given in the form of a lecture by platoon commanders, and parts 3, 4 and 5 taken by instructors. A demonstration should be given, showing the fire positions and concealment of the teams. The ground over which the teams are to work must be carefully selected, so that it affords the following facilities:—

(i) Likely lines of tank approach.

(ii) Likely weapon positions which offer:—
Good concealment from air and ground.
Some defilade from the front.
Good fields of fire.

(*b*) Parts 3, 4 and 5 should be frequently practised on different types of ground and confirmed by live firing.

(*c*) All officers and NCOs must be fully conversant with Sections 60 and 61 of Infantry Training, Volume IV—Tactics, The Infantry Platoon in Battle, 1960 (Army Code No. 9624).

Approach

148. Technical knowledge and handling of the weapon are only preliminary work. However, a combination of both is the foundation on which its tactical handling is based. The aim now is to develop the anti-tank team into a highly efficient and offensive unit, capable of ensuring "one round, one kill", whether from a defensive position or as the end product of a stalk or ambush.

Target priorities

149. (*a*) The primary role of the weapon is to kill tanks. The power of the HEAT round is used to the full in this role. This primary role, owing to the small number of rounds carried, must always be given priority.

(*b*) In its secondary role the weapon can be used against soft-skinned vehicles, stone and concrete buildings, and emplacements. It may also be used with good effect against enemy anti-tank guns in forward areas.

Tank killing

150. There are two main methods. These are:—

(*a*) From well prepared defensive positions which are sited to cover enemy tank movement, and in accordance with a co-ordinated battalion anti-tank defence plan of other tank killing weapons.

(*b*) Tank hunting in mobile operations or when prepared defensive positions are not practicable. In these circumstances it will be necessary for tank hunting teams to stalk and kill tanks.

PART 1.—TANK KILLING FROM WELL PREPARED DEFENSIVE POSITIONS

Siting of fire positions in defence

151. A co-ordinated fire position for the anti-tank weapon must:—

(*a*) Have a good field of fire covering the likely lines of tanks moving in the arc allotted. The field of fire will depend on the ground, but, in general, the shorter the range, the more certain the kill. In its primary role, therefore, a maximum field of fire of 600 metres, and a minimum of 100 metres, is desirable.

(*b*) Be defiladed from the front, because tanks are more vulnerable on the sides. Concealment of the back-blast is easier. The weapon should be sited to fire across the probable lines of advance by tanks.

(*c*) Be mutually supporting with other anti-tank weapons in the locality. Where possible their arcs of fire should overlap, covering all likely tank approaches.

(*d*) Have cover, concealment and freedom of traverse.

152. Alternative positions must be selected, to cover the same arc, to which the team can move by way of a covered approach.

When in position

153. (*a*) To obtain surprise, the team must remain concealed and quiet until a tank kill is assured. Tanks work in groups, and crews will be on the look-out for anti-tank weapons. The weapon must be concealed both in the approach to the position and when in position.

(*b*) Correct estimation of range is vital. The general tendency is to underestimate the range. If possible, as in prepared defensive positions, certain landmarks within the arc should have their ranges plotted accurately.

(*c*) Consideration must always be given to back-blast. The No. 2 must always be on the alert to check that the back-blast area is clear of troops. Particular care must be taken that no ammunition of any kind is in the back-blast area.

(*d*) In defence, all available rounds will be dumped with the weapon.

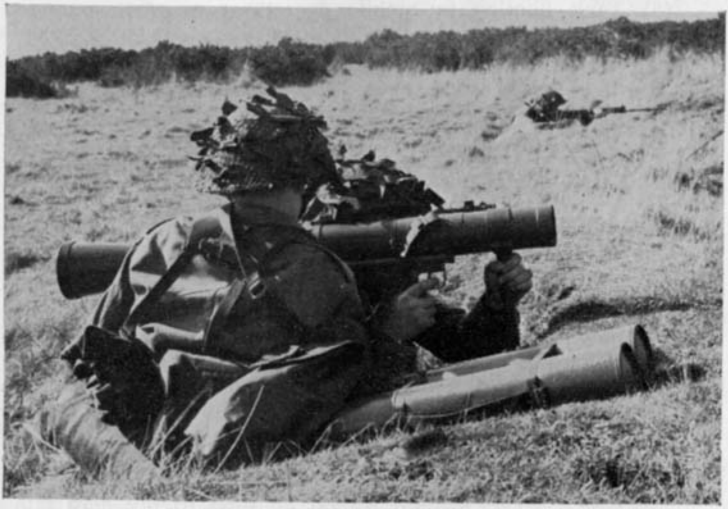


Fig 19.—Prepared position.

PART 2.—TANK HUNTING AND AMBUSHING

154. It is of the utmost importance that teams be trained to stalk and kill tanks. This part deals with the methods to be used to carry the weapon and ammunition, and to stalk to a fire position.

155. Tanks usually operate in groups and will be equipped with machine guns. In some cases there may be riflemen who are carefully concealed with the object of picking off tank hunting crews.

156. (*a*) The anti-tank team should be attached to a rifle section, who will be responsible for giving supporting fire when needed. In battalions mounted in vehicles, the weapon will be a section weapon.

(*b*) During the approach, the anti-tank team may remain close to the section, but when the position from which the stalk is to be made is reached, the team are to inform the section commander that they are about to stalk.

157. The section commander must co-ordinate the movement of the section so that they are positioned where they can give supporting or protective fire, but the position must in no way interfere with, nor impede, the movements of the stalking team. The section commander must also be on the look-out for other enemy tanks and infantry.

158. When the anti-tank team has reached its selected fire position and has engaged the target, unless a second tank is within stalking distance, it should rejoin the section.

Ambushing

159. (*a*) An ambush may be laid with the object of destroying enemy tanks that are moving. Surprise is the key to success, and the anti-tank team must be trained to make the utmost use of the ambush.

(*b*) As in tank hunting, the team should be attached to a rifle section, who will be responsible for giving covering fire as necessary, and also for picking off tank crews or infantry in the ambush area after the tank target has been engaged.

160. There are certain points which must be remembered if the ambush is to be successful:—

(*a*) The anti-tank team and the section may be in position for a long time. They must therefore exercise patience.

(*b*) The key to a successful ambush is surprise. This can only be achieved if strict camouflage discipline is enforced.

(*c*) The ambush must be planned and, if possible, should be rehearsed.

161. It may be necessary to have two, or even three, anti-tank teams to form the ambush party. Much will depend on the approaches to the ambush area.

162. Firing positions of all the ambush party must be carefully selected, so that the whole of the killing area of the ambush can be engaged.

PART 3.—BATTLE HANDLING

Aim

163. To practise teams in the battle handling of the weapon and to teach correct battle techniques.

Stores

164. One weapon in transit case and one SMG and three magazines per team. Drill rounds in carriers, moving tank targets or vehicles, 7.62-mm drill rounds, rifles and battle order, camouflage cream and scrim.

Preliminaries

165. Normal safety precautions. Fit telescopes. Prepare for battle.

Instructor's notes

166. (*a*) Training areas should have prepared trenches correctly sited to afford a maximum field of fire.

(*b*) If moving tank targets are not available, vehicles should be used. A system of signals must be arranged so that the movement of these vehicles varies in speed and direction.

The team

167. Explain and demonstrate, using members of the squad:—

(*a*) The team will normally consist of two men:—

No. 1—the commander and firer.
No. 2—the loader and assistant.

(*b*) In certain circumstances it may be necessary for a rifleman to be detailed to carry extra rounds for the weapon.

(*c*) The team is normally equipped as follows:—

(i) No. 1—the weapon, fitted with telescope; one container of two rounds; bag No. I; face veils; SMG and three magazines; one 36 grenade.

(ii) No. 2—rifle; bayonet; 60 rounds 7·62-mm ammunition in three magazines; two containers each of two 84-mm drill rounds; bag No. II; one 36 grenade.

Practice

168. Order teams to occupy the prepared positions. Give a simple tactical picture, indicating:—

(*a*) Position of enemy.
(*b*) Position of friendly forces.
(*c*) Likely lines of enemy tank approach.

Order teams to judge distances to prominent landmarks.

169. Explain:—

(*a*) When the position is occupied the weapon will be loaded, with safety catch applied, and will be laid across the trench from front to rear and covered with face veils or other means of concealment. The No. 1 should be on the left of the weapon; the No. 2 on the right.

(*b*) All rounds are to be dumped in such a position that they are readily available for loading.

(*c*) Either number is to adopt a position of observation, watching the arc of fire allotted.

170. Practise squad.

Engaging targets

171. A pre-arranged signal should be given for tank targets to move into the arcs indicated. Teams engage the targets.

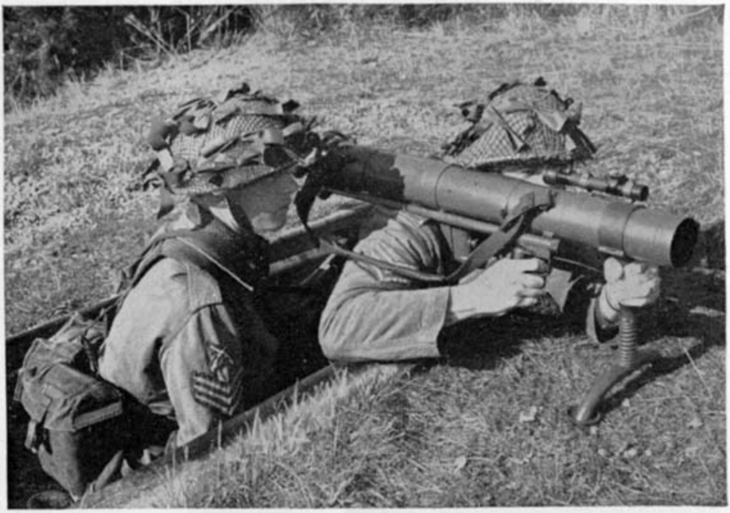


Fig 20.—Firing from a fire trench

Criticism

172. After some practice has been given, teams are to be criticized on the following points:—

(*a*) Speed in spotting target and estimation of the range and speed.

(*b*) Position for firing. Was the venturi over the rear of the trench and clear of the ground?

(*c*) Did the movement of the No. 2 conform to that of the No. 1?

(*d*) Speed of loading and firing.

(*e*) Concealment.

173. Further practice as necessary.

Alternative positions

174. Order teams to move to alternative positions, and when in position practise and criticize as above.

Conclusion

175. Questions to and from the squad.

176. Sum up.

PART 4—STALKING

Aim

177. To practise teams in the techniques of tank hunting and ambushing.

Stores

178. As for Part 3.

Targets

179. Either tank targets or vehicles may be used. Drivers must be carefully briefed as to the route to be taken and their actions on being engaged.

180. A system of signalling must be employed between the officer or instructor conducting the practice and the drivers of the vehicles.

Instructor's notes

181. (*a*) The ground over which the stalk is to be made must be selected before the practice begins.

(*b*) The area should be some distance away from the start point, so that practice can be given in the approach and in stalking to the final fire position.

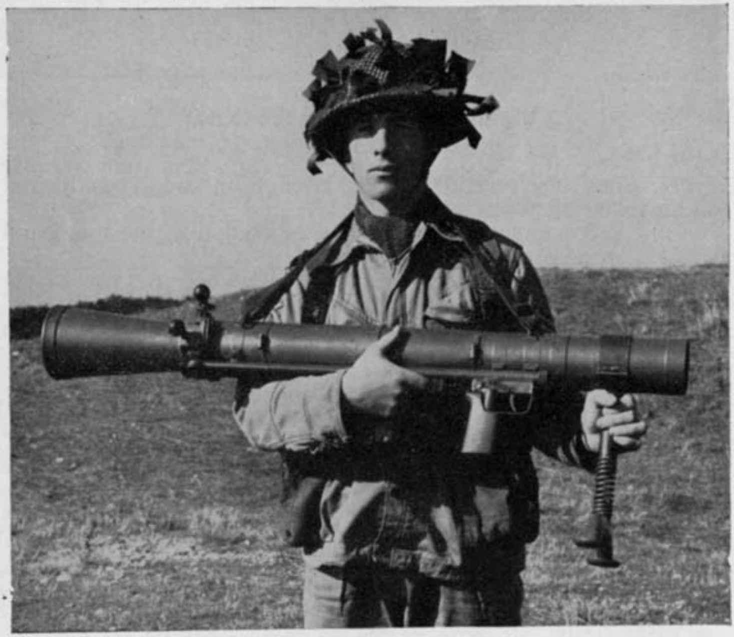


Fig 21*a*.—Carriage

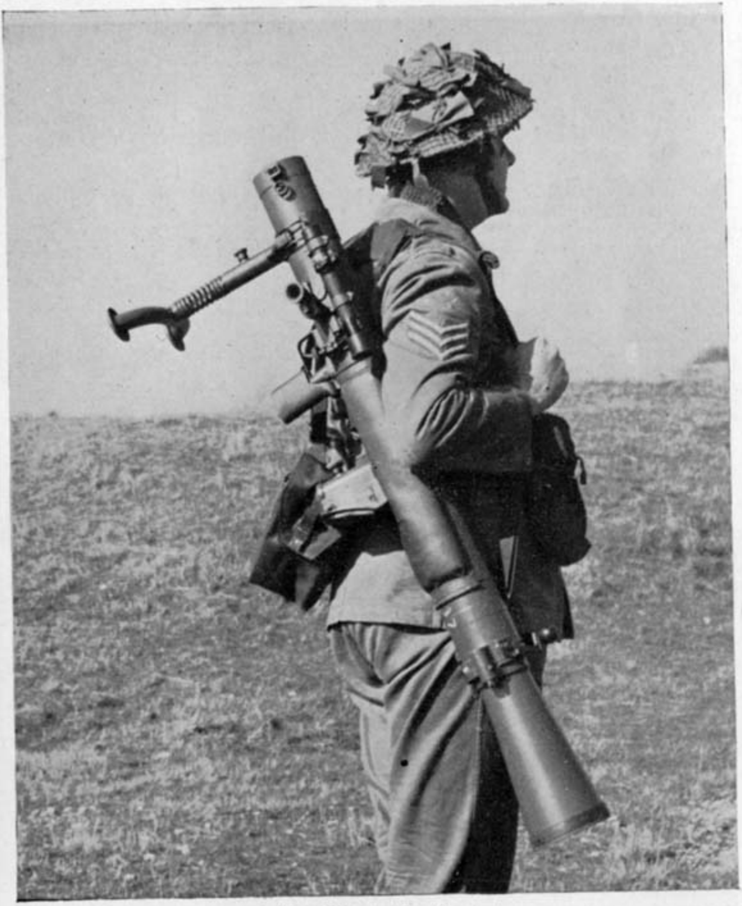


Fig 21*b*.—Carriage

Preliminaries

182. Normal safety precautions. Fit the telescope. Anti-tank teams and rifle section are to be equipped and prepared as for battle.

Practice

183. Explain actions of anti-tank teams and rifle section:—

- (*a*) During the approach the weapon can be carried slung over the shoulder.
- (*b*) The No. 2 should move ahead of the No. 1 as a scout; he should select the route and keep a look-out for enemy troops.
- (*c*) The team should move apart from the rifle section, but should always be in contact with it.
- (*d*) The section commander must employ the best formation suitable to the ground.

184. The section and team should be ordered to move off in the direction indicated by the instructor.

185. On reaching the position from which the anti-tank team is to stalk, the section should be halted and ordered to take up suitable firing positions to support the anti-tank team.

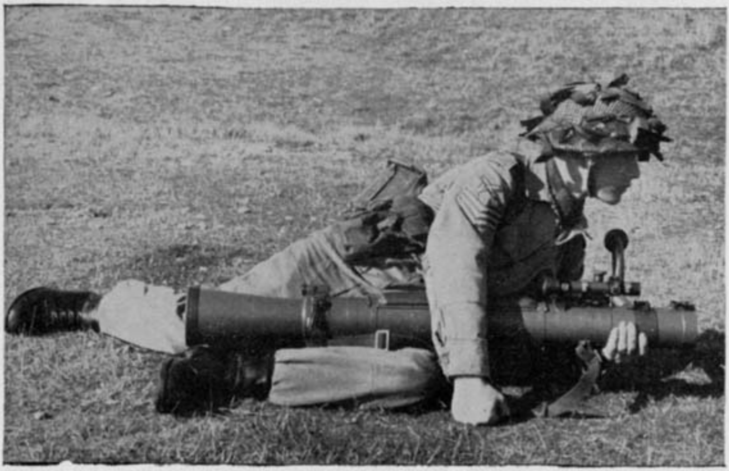


Fig 22.—Side crawl

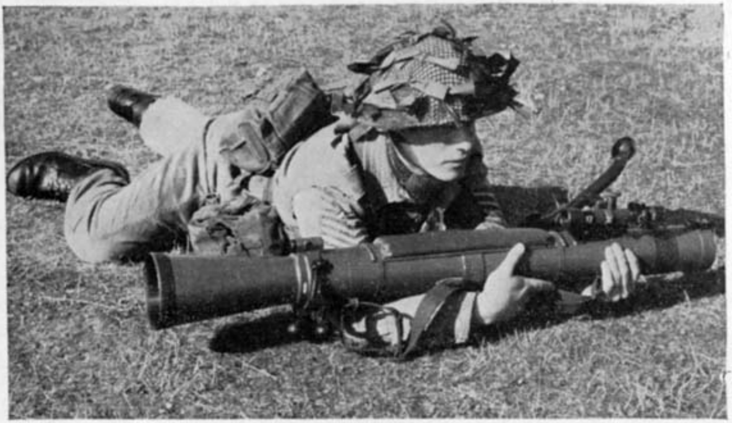


Fig 23.—Leopard crawl

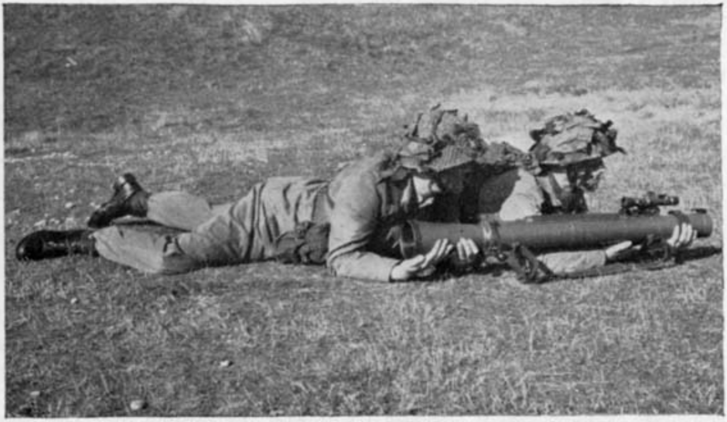


Fig 24.—Crawling, two men

The stalk

186. Explain the actions of the Nos. 1 and 2:—

(*a*) The weapon should now be loaded and the safety catch applied.

(*b*) The No. 2 is to act as scout, selecting the line of the stalk and the approximate firing position.

(*c*) The No. 1, on arriving at the position, chooses a suitable fire position from which to engage the target. To obtain concealment it may be necessary for the No. 2 to be on the left of the weapon.

(*d*) Speed in loading second and subsequent rounds cannot be over-emphasized.

(*e*) If the stalk is long and difficult, the No. 2 should assist the No. 1 in crawling with the weapon.

187. Practise the Nos. 1 and 2 in stalking and engaging the target. When this has been done, they should rejoin the rifle section.

188. Both the rifle section and the anti-tank team are to be criticized, and, if necessary, the approach and the stalk should be repeated.

Further practice

189. Change over the Nos. 1 and 2 and repeat the above on a new piece of ground.

Conclusion

190. Questions to and from the squad.

191. Sum up.

PART 5.—AMBUSHING

Aim

192. To practise teams in the techniques of ambushing and killing tanks.

Stores

193. As for Part 3.

Targets

194. As for Part 3, with pre-arranged signals for movement through the ambush area.

Instructor's notes

195. The area where the ambush is to be laid must be carefully selected, and drivers of vehicles to be used as targets must be rehearsed in their actions. The ambush area should be some distance away from the start point, in order to give further practice to both the anti-tank team and the rifle section in the approach to the area.

Preliminaries

196. Normal safety precautions. Fit the telescope. Equip the anti-tank team and section as in Part 3.

197. The instructor must study Section 60 of Infantry Training Volume IV—Tactics, The Infantry Platoon in Battle, 1960 (Army Code No. 9624). This section sets out in detail the duties of an ambush party.

Practice

198. The ambush party should be ordered to move to the ambush area and, on arrival, to take up their positions.

199. The officer, or section commander, is responsible for selecting the fire position for the anti-tank weapon. He should also post look-outs, who will give warning of enemy movement into the ambush area. The remainder of the rifle section must be positioned so that they can effectively cover the ambush area. The GPMG/LMG must have priority as regards siting.

Engagement of targets

200. The vehicles are to be signalled to move into the ambush, where they will be engaged by the anti-tank team.

201. The actions of the team must be criticized and, if necessary, the whole action should be repeated.

202. Further practice as necessary on new ground.

Conclusion

203. Questions to and from the squad.

204. Sum up.

PRACTICE 3.—FIRING, ACTION ON A MISFIRE, HANDLING AND STALKING

Aim

205. To practise the men in firing, action on a misfire, handling and stalking.

Stores

206. Weapons in transit cases complete, drill rounds in containers, spare parts wallets, SMGs, magazines, camouflage cream. Sub-calibre rounds, 6·5-mm ammunition, tank targets, red flags.

Instructor's notes

207. Men should be divided into teams for stalking and handling practice. An open range is required for sub-calibre firing.

Preliminaries

208. (*a*) Safety precautions.
(*b*) Camouflage teams.

Practice

209. (*a*) Practise men in firing and action on a misfire, in prepared fire positions; the practice should be based on the training tests.

(*b*) Divide up the squad into anti-tank gun teams, and set problems involving stalking a tank and getting into fire positions.

Conclusion

210. Questions from and to the squad.

211. Sum up progress made.

CHAPTER 2.—EXTRA INFORMATION FOR INSTRUCTORS

SECTION 1.—ZEROING THE SUB-CALIBRE DEVICE

Aim

212. To teach NCOs how to zero the sub-calibre device.

Stores

213. Weapons in transit cases complete; two sub-calibre devices per weapon; 10 rounds 6·5-mm ammunition per device; zeroing targets at 100 metres; ear defenders for each man.

Instructor's notes

214. (*a*) All weapons used in this lesson must have been boresighted, and both telescope and open sights zeroed.

(*b*) The lesson is to be taught on the 100-metre firing point on the open range.

Preliminaries

215. Normal safety precautions. Fit telescopes.

Approach

216. Three devices are issued with each weapon. It is essential that they be zeroed as soon as possible after issue to units. When they are correctly zeroed they can be used in any zeroed weapon.

Adjustment for zero

217. Explain and demonstrate:—

(*a*) There are four bearing screws set at right angles around the outer case. These are retained by retaining screws through the front of the case.

(*b*) The bearing screws are in opposing pairs, so that, with the device held as for loading, one pair will adjust for vertical errors and one pair for lateral errors.

(*c*) The retaining screws must be loosened before the bearing screws are moved, and screwed up after any adjustment has been made.

(*d*) A double-ended screwdriver is used to adjust both the retaining and the bearing screws.

218. Question the squad.

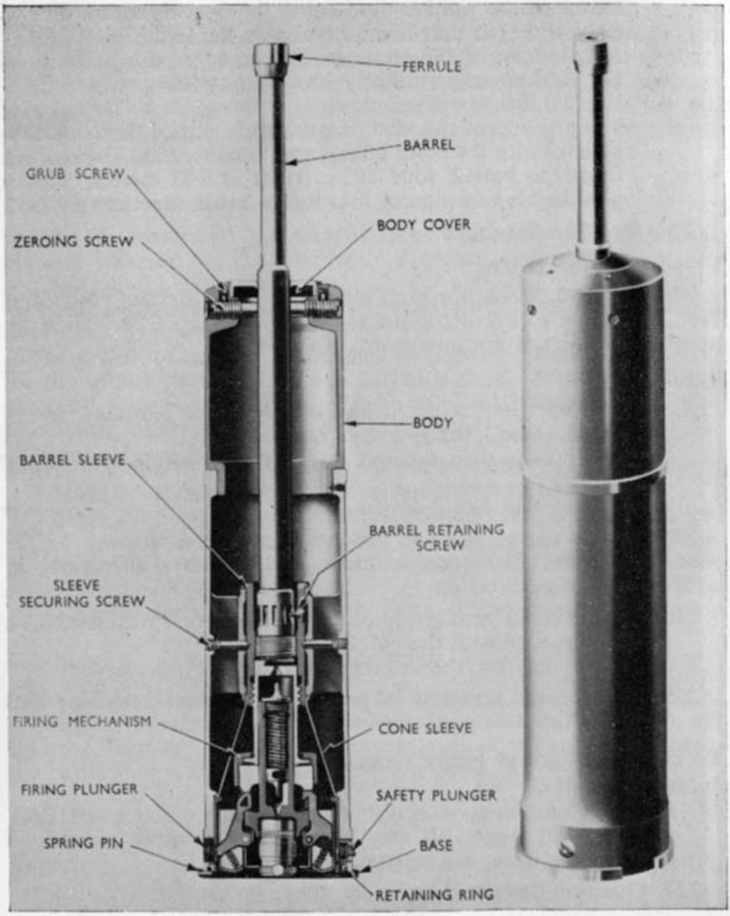


Fig 25.—Sub-calibre device

Zoring data

219. (*a*) Always move the barrel in the direction in which you want your shots to go; eg, if your shots have struck left, move the barrel to the right by loosening the bearing screw on the right and then tightening the one on the left.
  (*b*) A half turn of the bearing screw changes the position of the MPI by approximately 10 inches at 100 metres.
  (*c*) Explain, using a diagram:—
  The position of the MPI of a correctly zeroed device should be level with the point of aim and, because the sight is offset from the barrel, four inches right at 100 metres, with a permissible variation of four inches in all directions.

220. Question the squad.

Preparation for zeroing

221. The two devices for each weapon may be marked No. 1 and No. 2, in order to avoid confusion during zeroing. Check that the numbers on the adaptor and device are the same.

Zeroing

222. (*a*) Call up the first detail and order "*Lying position: No.* 1 *device—load*", followed by "*One hundred*".
  (*b*) The firer is then ordered to fire three rounds with No. 1 device.
  (*c*) Repeat with No. 2 device.

223. Details are to examine the targets and note errors. NCOs should then be called upon to make any necessary alterations in either elevation or direction.

224. (*a*) Fire a check zero group of three rounds, first with the No. 1 device, then with the No. 2 device.
  (*b*) Again examine the targets and re-zero as necessary.

225. If time and ammunition permit, remove the telescope and fire a group using the open sights.

To fire sub-calibre at longer ranges

226. Explain:—
6·5-mm ammunition does not precisely match practice or HEAT rounds at all ranges. It may be necessary to apply corrections to elevation, using the range drum.

227. Question the squad.

Conclusion

228. (*a*) Questions from and to the squad.
  (*b*) Clean weapons and devices; pack away stores.
  (*c*) Sum up.

SECTION 2.—SUGGESTED SEQUENCE OF LIVE FIRING SUB-CALIBRE AND PRACTICE ROUNDS

Introduction

229. It is of the utmost importance that firing programmes are carefully planned and conducted, so that ammunition is not wasted.

The most difficult targets to "kill" are those which are moving. It is against these targets that the bulk of the ammunition allotment must be used. Sub-calibre firing is an economical means of practising the essential skills.

Training the battle shot

230. The battle shot is a trained soldier who is capable of firing all platoon weapons in the field with efficiency and accuracy under combat conditions. This combines the skills of visual training, fieldcraft and marksmanship with physical fitness and intelligent use of ground for movement and fire.

The system of training is designed to provide progressive training for the soldier to make him a good battle shot. After he has been exercised at engaging easy targets, he will be advanced to practices resembling, as far as possible, field conditions.

231. The five stages of training the battle shot are as follows:—

Stage 1—Preliminary (grouping and zeroing, 100 metres).
Stage 2—Application of fire (stationary and moving targets, 100–500 metres).
Stage 3—Intermediate marksmanship course (moving targets, 200–400 metres).
Stage 4—Individual battle shooting (from prepared defensive positions).
Stage 5—Team battle shooting (tank hunting and ambushing).

232. The allotment of the various types of ammunition will be laid down from time to time in the Scales of Common User Ammunition for Training. A suggested breakdown of ammunition to train the battle shot is shown on page 60 as a guide.

SECTION 3.—ADDITIONAL STRIPPING FOR OFFICERS, NCOs AND GUN NUMBERS

233. It may be necessary, when working in extreme conditions of sand or dust, to strip and clean the trigger mechanism. Parts for which spares are carried may have to be changed, should they become defective.

Contents of the spare parts tool roll

234. The tool roll carried in the spare parts wallet contains:—
- Two drifts
- Foresight assembly
- Three screwdrivers
- Combination tool
- Mainspring
- Box of spare parts, containing:—
    - Screw, retaining, extractor spring
    - Screw, retaining, extractor
    - Extractor spring
    - Firing pin
    - Front and rear mechanism caps
    - Screw, retaining, foresight
    - Nut, retaining, foresight
    - Screw, retaining, locking plate
    - Locking plate
    - Gauge, measuring, venturi
    - Range indicator, rear sight
    - Screw, retaining, range indicator
    - Sear
    - Sear axis pin
    - Sear spring
    - Trigger axis pin.

Trigger mechanism

235. With the pistol grip uppermost, strip the weapon as taught. Unscrew the locking plate retaining screw and remove the locking plate. Withdraw the trigger axis pin and remove the trigger, complete with spring. Remove the safety catch. Withdraw the sear axis pin and remove the sear, complete with spring. It may be necessary to turn the gun over at this stage, to allow the sear to fall clear of its housing. Assembly is carried out in the reverse order, care being taken when replacing the sear to ensure that the claw is towards the venturi, with the spring towards the barrel.

Foresight assembly

236. Using the combination tool, remove the nut and push out the retaining screw. Assemble in the reverse order.

Range indicator rear sight

237. Unscrew the retaining screw and remove indicator from its dovetail. Assemble in reverse order.

Extractor spring

238. Unscrew the retaining screw and remove the spring. Assemble in reverse order.

Conclusion

239. The gun must not be stripped further than as detailed in this section. Any further stripping or adjustment is to be carried out by the unit armourer.

SECTION 4.—TRAINING TESTS

Test No. 1—Team loading

240. (*a*) The Nos. 1 and 2 are to be in the kneeling position, the No. 1 holding the weapon in the correct position. Time allowed is six seconds from the command "*Load*" until the No. 2 says "*Loaded*".

(*b*) *Standard:* This test is to be done three times. All actions are to be correct and within the required time limit each time.

Test No. 2—Action on misfire

241. (*a*) Both the No. 1 and the No. 2 must go through the complete misfire drill. They are to be changed over, so that both are tested.

(*b*) *Standard:* All actions are to be correct.

Test No. 3—Aiming—telescopic sight

242. (*a*) The soldier will be presented with three problems involving points of aim at moving targets. He will be required to place a transparent model of the pattern of the telescopic sight over a representative tank silhouette.

(*b*) *Standard:* All solutions are to be correct.

Test No. 4—Boresighting—telescopic sight

243. (*a*) The Nos. 1 and 2 will be required to boresight with the telescopic sight.

(*b*) *Standard:* All actions and settings are to be correct. No time limit.

SECTION 5.—AMMUNITION

244. The ammunition is classified as either HEAT, practice, sub-calbre or drill. Details of various types are given in the paragraphs following.

HEAT ammunition

245. HEAT (high explosive anti-tank) ammunition is designed for use against armour, concrete or similar types of targets. In addition to its great penetrating power against such targets, the fragments of the shell will have a high lethal effect on troops in close proximity to the target. The shell is traced, and has an instantaneous nose fuze which does not become armed until it is approximately 5 to 10 metres in front of the muzzle. The tracer ignites 30 metres from the muzzle. A special slipping ring takes the place of the normal driving band.

246. Data for HEAT ammunition are as follows:—

Weight of shell	3·75 lb
Weight of complete round	5·7 lb
Packing container (two rounds)	3·5 lb
Muzzle velocity	1,020 ft/sec
Time of flight for 350 metres	1·5 secs
Height of trajectory at 330 metres	5 ft 3 inches

247. In order that the limitations of this round may be fully appreciated, the following must be understood:—

(*a*) To obtain correct detonation of the round, the body and the distance tube carrying the fuze must be undamaged, so that the flash from the fuze can pass down the tube and hit the exploder in the base of the round. For this reason, a round with a damaged body may fail to detonate even if the fuze functions correctly.

(*b*) The fuze has no graze action, and to obtain correct functioning of the round the fuze, in an undamaged condition, must be the first part of the round to strike the target. If the body of the round strikes before the fuze, the round will become badly damaged or may be completely broken up, thus preventing detonation, even if the fuze subsequently functions correctly.

(*c*) The body of the round will strike before the fuze, causing damage to the round and/or distance tube and thus preventing correct detonation, in the following conditions:—

  (i) When the round hits flat ground in almost horizontal flight.

  (ii) When the round strikes the edge of a hard target or when the target is at an angle of more than 1,067 mils (60 degrees) to the line of flight.

  (iii) When the fuze enters a hole or recess in the target (eg, a small gap or existing hole in armour or in a tank suspension, a crack in rocks, etc).

(*d*) Details of the nose fuze for the HEAT round may be found in the revised edition of the user handbook (to be published).

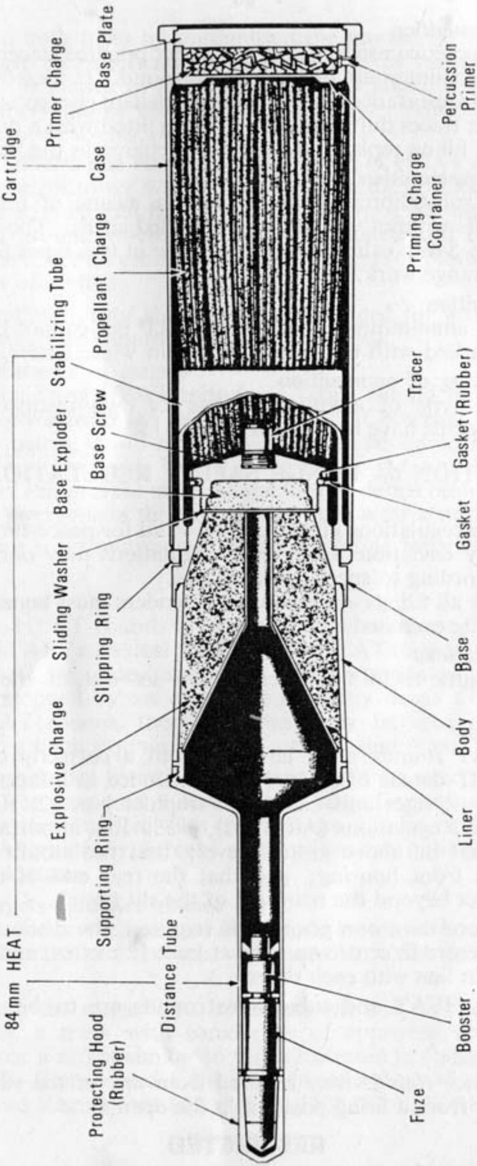


Fig 26.—The HEAT round

Practice ammunition

248. The practice round (TPTP or target practice tracer projectile) is a practice counterpart of the HEAT round. It therefore has the same general appearance and the same propellant charge as the HEAT round, and it traces during flight; but it is fitted with a dummy fuze, and an inert filling replaces the explosive charge in the head.

Sub-calibre ammunition

249. The sub-calibre device provides a means of practising all essential drills without wastage of inert filled shells. The sub-calibre round is of 6·5-mm calibre and is available in two types for outdoor and indoor range work.

Drill ammunition

250. Drill ammunition is similar to TPTP but cannot be fired. It is clearly marked with the word DRILL in white letters.

Colour marking of ammunition

251. Each type of ammunition has its own distinctive colour marking. Details have been given in para 15.

SECTION 6.—RANGE SAFETY REGULATIONS

Introduction

252. (*a*) The regulations given here are valid for peace-time training. Any deviations from these regulations may only be made according to special instructions.

(*b*) For all firings approved ear defenders must be used by men being exercised.

Range precautions

253. Precautions to be observed are set out in the following paragraphs.

HEAT rounds

254. HEAT rounds must be fired from a correctly constructed emplacement; details of this are being included in Infantry Training Volume III—Ranges and Courses, Pamphlet No. 32, Range Construction and Regulations (All Arms), 1958. It is important that the venturi should be above ground level; that the mount should be fitted to the front housing; and that the rear end of the venturi should project beyond the rear wall of the slit trench.

255. If more than one position is required, the distance between them from centre to centre must be at least 12 metres, and they must be laterally in line with each other.

256. Only HEAT and sub-calibre rounds are to be fired on a HEAT range.

Practice rounds

257. Practice rounds may be fired from any of the standard fire positions, or from a firing position in the open.

258. With both types of ammunition the ground behind the firing position **must** be free from any vertical face or obstruction for a distance of 30 metres in rear and within an angle of 800 mils (45 degrees) either side of the axis of the barrel. Ammunition must never be dumped in this area.

Conducting officers and waiting details—firing of HEAT rounds

259. A control tower will be provided for the conducting officer. This will be so sited that he can observe all firers, waiting details and the area of ground where the target is situated and beyond. He must be able to see all ground beyond the target for plotting purposes in the event of a blind.

260. A splinter-proof shelter will be provided for waiting details. This will usually be situated 12 metres to a flank.

Minimum distance of targets

261. When firing HEAT rounds no target should be sited at less than 200 metres from the firing positions. If however the target is within 200 metres, it will be necessary for all personnel on the firing line to lower their heads below cover before the round strikes the target. This will prevent injury to the face by debris blown back from the target. Everyone in the danger area must wear a steel helmet.

262. There is no minimum distance for siting targets for practice rounds.

Types of target

263. For HEAT rounds a hard target must be used; this can be either an old AFV or a steel plate. If firing HEAT rounds, the incidence of blinds will be undesirably high unless rounds which miss the target are stopped by an obstacle sufficiently dense to actuate the fuze. HEAT rounds, therefore, must only be fired on approved ranges with a back stop and against a target that is not full of holes.

264. For practice rounds a soft target can be used. A suitable target, 16 feet long and 8 feet high, made of spun yarn with the outline of a tank marked with tracing tape, can be readily made by the unit. Alternatively, screens made of hessian or similar material are quite adequate.

Moving targets (practice rounds only)

265. The limits of the arc of fire should be marked on the ground by natural or artificial features which can be easily indicated to the gun teams.

266. When the range is to be permanent and its use will justify the expense, a track with some type of approved moving target equipment or a target similar to that illustrated in Infantry Training Volume III—Ranges and Courses, Pamphlet No. 32, Range Construction and Regulations (All Arms), 1958 (Army Code No. 9486),

Plate 50, can be mounted on a sledge and towed by some form of self-propelled trolley or winches.

267. A simpler and cheaper arrangement is illustrated in Plate 51 of the same pamphlet. The target should be as light as possible; a smaller target must therefore be accepted. The target sledge is illustrated in Plate 52 of Pamphlet No. 32.

Destruction of blinds

268. For destruction of blinds *see* Infantry Training Volume III—Ranges and Courses, Pamphlet No. 31, Ranges (All Arms, 1958 (Army Code No. 9485), Sections 52–55.

Safety regulations—other types of ammunition

269. Regulations governing other types of ammunition will be promulgated by amendment when information is available.

SECTION 7.—TRAINING THE BATTLE SHOT

Ammunition

270. It is suggested that the ammunition available may be used as under:—

Stage	Initial Training				Annual Training			
	HEAT	Prac	6·5-mm Outdoor	6·5-mm Indoor	HEAT	Prac	6·5-mm Outdoor	6·5-mm Indoor
1. Preliminary Grouping and Zeroing—100 metres			20				10	
2. Application of Fire—Stationary and Moving Targets (to include Hull Down, Head On and All Angle Targets and Direct Crossers):								
100 metres			5	10			5	5
200 metres			10	10			5	5
300 metres			10	10			5	5
400 metres			10	10			5	5
500 metres			10	10			5	5
3. Intermediate Marksmanship Course—Moving Targets (to include Head On and All Angle Targets and Direct Crossers):								
200 metres			5					
300 metres			5					
400 metres			5					
4. Individual Battle Shooting	1	5	5	10	1	3	5	15
5. Team Battle Shooting		2	5			4	10	
TOTALS	1	7	90	60	1	7	50	40

271. If the above scale of ammunition is not available in full, the breakdown should be adjusted to maintain experience at the longer ranges at the expense of the easier practices.

272. The standard to be achieved in Stage 3 is 12 hits out of 15.

273. To assist in the selection of gun numbers, firers should not progress to Stages 4 and 5 until the standard of 12 hits out of 15 is reached in Stage 3.

APPENDIX A

INDOOR RANGE SHOOTING

Aim

1. To give men practice at shooting in the indoor range at representative tank targets.

Stores

2. Weapons in transit cases complete, sub-calibre devices, indoor ammunition, representative tank targets.

Instructor's notes

3. Representative tank targets must be of the correct representative size. A simple formula for finding the correct representative size of target at a reduced range is:—

$$\frac{\text{Actual size of target (in inches)} \times \text{range (in metres) to the representative target}}{\text{Range (in metres) that is to be represented.}}$$

Example: For a tank 20 feet long, 10 feet wide and 10 feet high, at 300 metres' range, the formula to determine the size of a representative target which is required for practice at a distance of 10 metres is as follows:—

$$\frac{20 \times 12 \times 10}{300} \text{ for length of side view.}$$

$$\frac{10 \times 12 \times 10}{300} \text{ for height and width (front view).}$$

Preliminaries

4. Safety precautions.

Approach

5. Give the aim of the lesson.

Method of practice

6. To enable practice to be carried out without putting the weapon and sight out of zero, firing can take place at 10, 15 or 25 metres using scaled down representative targets. To enable the fire to be assessed, a ghost target will be required in addition to the representative target. The position of the ghost target is as follows:—

(*a*) At 25 metres: 4 inches right and 2 inches below the point of aim.

(*b*) At 15 metres: 4 inches right and 1 inch below the point of aim.

(*c*) At 10 metres: 4 inches right and level with the point of aim.

7. The target and ghost target will be as shown in Fig 27 (tanks not to scale) for shooting at 25 metres.

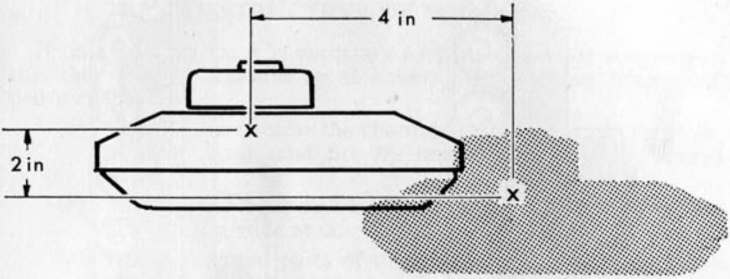


Fig 27.—Indoor range target

8. Firers should be exercised in firing the gun from various positions.

9. Criticize the team's actions and discuss the results obtained.

Conclusion

10. Questions from and to the squad.

11. Sum up progress made.

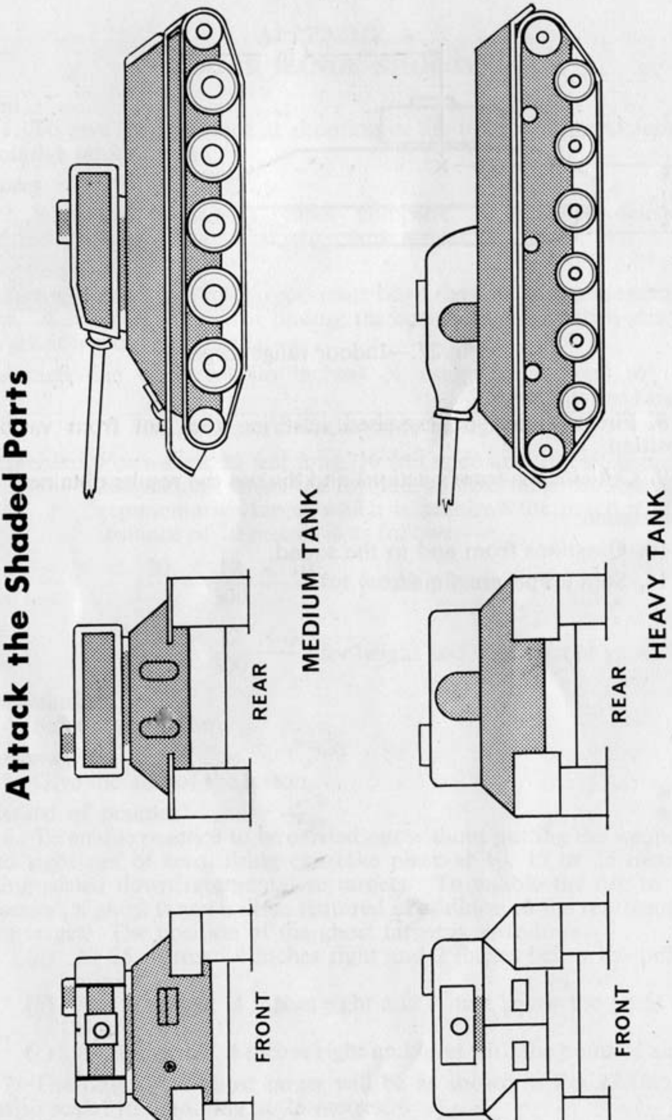


Fig 28.—Vulnerable parts of a tank

DESTRUCTION OF WEAPONS

If on active service it is necessary to destroy surplus weapons so that they become unusable by an enemy, the following actions will prove effective:—

(*a*) Plug the barrel near the chamber or bury the muzzle in the ground; load, and fire by remote control from behind cover.

(*b*) Strip as far as possible; bury and/or scatter remaining parts over a wide area.

(*c*) Retain essential parts of the mechanism that remain, such as usable firing pins, etc.

(*d*) Do not neglect the disposal of spare parts.

Should the foregoing destruction drill not be possible, other methods must be devised, eg, destroying by explosive charges or fire; running over by vehicles; scattering components in rivers and undergrowth. Unfired ammunition can be destroyed by explosives, using improvised demolition charges made up with grenades, bombs, etc.

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